

Chapter 2: Alternatives Including the Proposed Action

2.1 Alternative Design and Analysis

2.1.1 Alternatives

This EIS evaluates six alternatives to meet the need described in chapter 1:

- **STATUS QUO (NO ACTION)**
- **BPA EXERCISES MARKET INFLUENCE TO SUPPORT REGIONAL GOALS**
- **MARKET-DRIVEN BPA - *PROPOSED ACTION***
- **MAXIMIZE BPA'S FINANCIAL RETURNS**
- **MINIMAL BPA MARKETING**
- **SHORT-TERM MARKETING.**

These alternatives are designed to present an underlying goal and the range of actions BPA might take in its power marketing and transmission activities. The alternatives are described in section 2.2.

Within each alternative, BPA could take action on any of more than 20 major policy issues that fall into 5 broad categories:

1. **PRODUCTS AND SERVICES**
2. **RATES**
3. **ENERGY RESOURCES**
4. **TRANSMISSION**
5. **FISH AND WILDLIFE ADMINISTRATION.**

Section 2.4 describes the issues and shows how each issue is treated across the six alternatives.

Decisions on these issues will provide the policy direction BPA would use to develop specific implementing actions, such as contract terms and conditions; they will also guide rate development and implementation.

Because BPA recognizes that hydro system operations are likely to change as a result of decisions under the SOR process (a change that will affect the products and services BPA can provide), it has evaluated the BP EIS alternatives as they would be affected under two different hydro operations scenarios (see section 2.1.6).

2.1.2 Policy Modules

In response to key issues raised during review of the DEIS, BPA developed alternative strategies (called “modules”) to address key policy issues. These modules can be integrated with one or more of the alternatives. These modules, described in section 2.3, are grouped in four areas:

- **FISH AND WILDLIFE ADMINISTRATIVE POLICIES (FW)**
- **RATE DESIGNS (RD)**
- **SERVICE TO DSIs (DSI)**
- **ACQUISITION OF CONSERVATION AND RENEWABLE RESOURCES (CR).**

Some modules are intrinsic to (inherent in) certain alternatives; those are listed after the description of each alternative. In many cases, however, other modules can replace or add to those that are intrinsic, testing the effect of different policy choices and producing variations to the existing alternatives (see section 2.3).

BPA's Chief Executive Officer (Administrator) may ultimately select an action that does not exactly resemble the mix of components described under any one of the six alternatives. However, these alternatives and the modules are designed to cover the range of options for the important issues affecting BPA's business activities, and the impacts of those options. Variations can be assembled by matching issues and substituting modules among the six alternatives.

Please note that some of the features of these alternatives and modules may be realized only after changes in statutes that govern BPA's activities. Here are two examples:

- The Maximize Financial Returns alternative assumes a change in the statutory requirement that BPA provide firm power requirements service at rates sufficient to recover, in the aggregate, its total system cost, allowing instead for BPA to collect revenues in excess of its projected costs.
- The Minimal BPA Marketing alternative assumes that statutes are changed so that BPA is not required to acquire additional generating resources (including conservation) to serve customer loads pursuant to the Northwest Power Act.

Features potentially requiring statute changes are noted in the descriptions under sections 2.2, 2.3, and 2.4.

2.1.3 Market Responses

BPA's customers (or the retail consumers they serve) and non-BPA suppliers will react, probably in different ways, to each set of proposed policies under the alternatives and modules. BPA's actions and market reactions can be sorted into four areas (market responses):

1. **RESOURCE DEVELOPMENT** (what kind of resources might be developed)
2. **RESOURCE OPERATION** (how existing or new resources would be operated)
3. **TRANSMISSION DEVELOPMENT AND OPERATION** (how facilities to transmit power from a generating source to the point of use might be developed and operated)
4. **CONSUMER BEHAVIOR** (how consumers might react to changes in electricity rates).

These market responses determine many of the possible environmental impacts of BPA's actions, as well as whether the cost of an alternative would cause BPA's rates to exceed the level of maximum sustainable revenue (so BPA would not earn enough revenue to balance its costs).

For the purposes of the EIS, BPA considers market responses in three broad customer segments:

- 1) utility firm requirements power customers (currently limited to public agency, or “preference” customers);
- 2) DSIs; and
- 3) surplus and nonfirm-power customers, both within and outside the PNW.

The following example illustrates how market responses are identified.

Example: Say that BPA proposes to apply an additional surcharge for a full-service power and transmission package to customers whose resource plans are not approved by the Council. Those customers could react in one of three ways:

- (1) buy from BPA and pay the surcharge,
- (2) modify their resource development plans to receive Council approval (thereby becoming eligible to purchase from BPA without surcharge), or
- (3) purchase power and services from non-BPA suppliers.

Customers choosing (1) would have higher power costs that would affect their retail rates. Changes in resource plans under (2) could alter resource costs and also affect rates. Those who elect to do (3) might have to change existing resource or transmission operations or construct additional transmission facilities to deliver non-BPA services. Any action is a potential market response. Changes in utility costs from any of the three choices might raise the retail cost of electrical service, thus causing consumers to pay higher electric bills, switch to natural gas, or conserve energy—other market responses.

Market responses to individual issues are described in chapter 4, section 4.2. Market responses to the Business Plan alternatives and modules are described in sections 4.4 and 4.5

2.1.4 Environmental Impacts

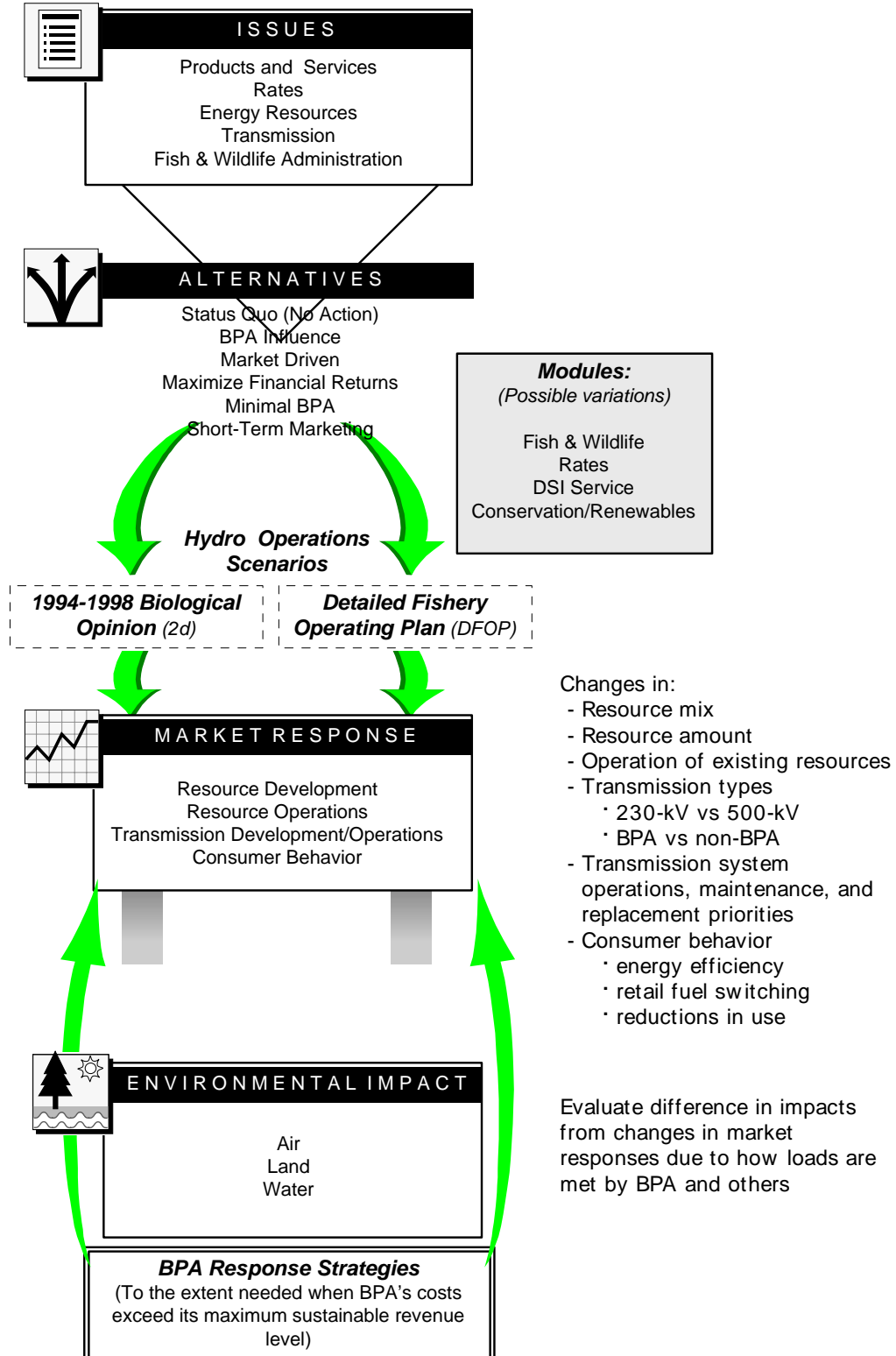
From the market responses, BPA can identify many of the likely environmental impacts of the alternatives.

Example continued: Given the market responses described above, BPA could estimate the air, water, and land use impacts incurred if non-BPA resources were developed to supply customers' needs. BPA could also estimate the impacts of changes in customer resource operations (as well as the impacts of the corresponding change in BPA's resource operations and acquisitions); the land use impacts of transmission development to deliver those resources to customer load; and the environmental and economic impacts of consumer decisions (such as whether to operate an industrial facility, or whether to provide heating energy from natural gas or wood instead of electricity).

Figure 2.1-1 summarizes the structure of the environmental impact analysis. Environmental impacts of Business Plan alternatives are described in detail in chapter 4, section 4.4.

FIGURE 2.1-1

Framework for Environmental Impact Analysis



2.1.5 Comparison of Alternatives

The market responses that determine the environmental impacts also determine whether BPA's costs will exceed the level of maximum sustainable revenue, i.e., whether its costs and revenues will no longer balance, and whether BPA will have to act to restore balance.

Previous environmental studies for key BPA actions (Initial Northwest Power Act Sales Contracts EIS, January 1992; and Final Environmental Assessment: 1993 Wholesale Power and transmission Rate Adjustment, February 1993) have showed that actual environmental effects follow the development and operation of energy resources (including conservation) and transmission facilities. With this knowledge, BPA has been able to use the market responses (energy resources and transmission development and operations, including the changes from consumer response of conservation and fuel switching) as the foundation for the environmental analysis (see Figure 2.1-1).

Example continued: If BPA's policy direction were to result in a significant loss of BPA customer firm loads, BPA revenues would be reduced, as BPA would have to sell power previously reserved for firm load service as lower-priced surplus or nonfirm power. If BPA firm power rates were close to the market price for power (so that raising BPA rates to make up the lost revenue would put the BPA price above that market price), then raising rates would not increase revenues. BPA would have to take other actions (response strategies) to increase revenues or to reduce costs. BPA would be likely to select strategies, for instance, to cut costs, seek financial support for non-revenue activities, intensify marketing efforts to get more revenue from surplus power, and plan for a higher level of financial risk, so that the agency would be able to meet its near-term financial obligations even with reduced revenues.

Consequently, the BP EIS focuses on relationships of BPA to the market. Together, these factors help define how the energy resources and transmission needs will be determined for the region, with BPA as just one of many entities in the electric energy market. Environmental impacts of Business Plan alternatives are described in detail in chapter 4, section 4.4, which begins with a close examination of the marketing relationships.

Section 2.5 describes and evaluates these response strategies; section 2.6 describes the relationships between market responses and environmental impacts and compares the alternatives in terms of environmental impacts, their success in balancing costs and revenues, their ability to meet the purposes described in chapter 1, and the likelihood that each alternative would achieve its stated goal.

2.1.6 Assumptions and Hydro Operation Strategies

The six alternatives for this EIS are based on certain common assumptions. They are also analyzed as they would be implemented under different hydro operation strategies.

2.1.6.1 Assumptions

The following assumptions are common to all alternatives.

- System operation planning continues according to the terms and practices established under the Pacific Northwest Coordination Agreement (PNCA), as amended.
- Power system reliability standards as developed by the utility industry for equipment protection and safety continue to be used.
- BPA fulfills its obligations under the Columbia River Treaty.

- BPA continues to fulfill its energy conservation and fish and wildlife obligations under the Northwest Power Act.
- Generally, other laws that govern BPA's activities continue to apply.
- BPA's obligation to provide transmission service is consistent with existing laws and the EPA-92 (except the Minimal BPA alternative, which assumes an exception from the requirement to build new transmission, and the Maximize Financial Returns alternative, which assumes an exception from the requirement to provide service at rates limited, in the aggregate, to BPA's total system cost).

2.1.6.2 Strategies for Future Hydro Operations

The DEIS assumed that river operations would continue under the NMFS's 1994-1998 Biological Opinion. The Supplemental Draft Environmental Impact Statement (SDEIS) (February 1995) modified that approach to look at impacts of a potential range of hydro operations on business activities and power production. That approach is continued here, and is described below.

Background

A system of dams regulates the flow of the Columbia River and its tributaries. (Existing major dams are shown on figure 4.3-5.) By storing and releasing water in specific amounts and at specific times, the river system supports many uses, including power production, irrigation, fisheries, navigation, recreation, and flood control. Past operations, however, have affected the ability of anadromous fish to migrate successfully from the upper rivers to the ocean and back again; consequently, a number of fish stocks have declined seriously in population over the last century. In response, operations of the river system have been modified. Additional yearly amounts of water flow have been designated for release to assist in fish migration (the Water Budget). Supplemental flows in specific places or at specific times (flow augmentation) have been added. More water may be released over dams (as spill) to flush fish safely and more quickly past the obstacles. The COE uses trucks and barges to transport many migrating juvenile fish downstream around the dams (adult fish swim up fish ladders at certain dams on their return).¹

Despite these changes, some fish populations continue to decline. A multi-agency effort (the SOR; see section 1.5.6) is underway to examine different combinations of water storage and release that would address the decline, as well as the many other purposes of the river. The March 1995 release of Biological Opinions (NMFS and USFWS) on fish survival issues and strategies will largely shape the direction of the SOR decision. A Final SOR EIS is expected in summer 1995.

Alternative Operation Strategies

The BP FEIS recognizes that river operations are likely to change, but the extent of the change is not yet known. Two river operation strategies were selected from the range of SOSs now being refined for the Final SOR EIS: these strategies encompass the range of effects that the SOR decision might have on BPA's business activities and BPA's ability to balance costs and revenues. The most current strategies used for the analysis in this EIS are called the 1994-1998 Biological Opinion and the Detailed Fishery Operating Plan (DFOP). However, for the reader's ease in understanding environmental impacts and in obtaining ready access to detailed information, the discussion of those impacts has been taken from the SOR DEIS, which uses earlier, approximate versions of these strategies. They are referenced in the SOR EIS as "Current Operation" and "Coordination Act Report Operation," respectively. The SOR EIS strategies are characterized briefly below.²

¹ For more information on impacts of river operations, see section 4.3.4.

² Illustrative numerical analysis in this EIS is based upon information developed since the publication of the Draft SOR EIS. The two SOSs used as alternative future hydro operating strategies (and described above) are being re-examined and modified in the ongoing SOR process. A variation of "Current Operation" is being further developed into a new SOS called "1994-1998 Biological Opinion" in the Final SOR EIS; "Coordination Act Report Operation" is being replaced by

Current Operation (SOS 2c). This strategy is comparable to operations as they existed in 1993; it provides springtime flows to aid migration of salmon, along with barging and other measures to support survival of anadromous fish. Up to 3 million acre-feet (MAF) of augmented flow would be provided annually on the Columbia River, in addition to the flows already provided for in the Water Budget. Some additional water would be released in the Upper Snake River in drier years. Supplemental drafts would be provided from Dworshak Reservoir (Clearwater River). Lower Snake River projects would continue at near-minimum operating pool levels. John Day Dam (Columbia River) would continue to operate at a level that would provide at least a minimum water level for irrigation. All juvenile fish collected would be transported around the dams. This strategy represents the least-cost likely plan for power among those evaluated in the SOR. It includes about \$350 million per year in fish-related costs.

Coordination Act Report Operation (SOS 7a). This strategy relies on higher flows, increased spill, and reservoir drawdown. The river system would be operated to meet flow targets that increase flows above current levels to enhance anadromous fish migration. This strategy requires a partial drawdown at Lower Granite Dam (Snake River). Flow releases would come from numerous sources. No juvenile fish would be transported; heavy spill would occur at projects where fish would otherwise have been collected. This strategy represents the highest cost for power production. It includes \$700 million or more per year in fish-related costs.

These two evolving strategies were selected as likely “endpoints” for the following reasons: (1) Current Operation represents the “No Action” alternative for the SOR EIS, and is taken as a baseline; (2) Coordination Act Report Operation was developed by agencies with a direct interest in anadromous fish survival, in an attempt to improve migration and thus survival of anadromous fish; and (3) the business consequences of the two strategies represent the least and highest impacts for power among likely alternatives.

2.2 Description of Alternatives

The six alternatives are described below. The environmentally preferred alternatives are Status Quo and BPA Influence. The proposed action is the Market-Driven alternative. See section 2.6 for a comparison of all six alternatives and their impacts, including variations with modules.

2.2.1 Status Quo (No Action)

BPA would not take significant actions to respond to the recent changes in the wholesale power market. BPA would continue its pre-1994 role, including meeting the energy conservation and fish and wildlife requirements of the Northwest Power Act by planning for long-term development of the regional power system; by acquiring resources to meet BPA’s customer loads; and by sharing costs and risks among its firm power customers and non-Federal customers using the Federal transmission system.

BPA business would have continued as it has in the recent past. BPA would:

- offer products and services as currently packaged, including various power system services with firm requirements power;
- continue to offer available surplus power products to its established regional and extraregional trading partners;
- continue present power sales contracts with utilities and DSIs, and then renew those power sales contracts essentially unchanged;
- continue current pricing policies and rate designs for transmission and power;

“Detailed Fishery Operating Plan,” which includes a package of measures involving much greater releases of water, and consequently, reduced opportunities for power production. See section 4.3.4 for detail.

- charge for new and existing transmission and wheeling services based on average embedded cost rates;³
- continue its resource acquisitions (including conservation, renewable, and thermal programs), based on the Council's Power Plan and BPA's 1992 Resource Program, as necessary to meet contractual load obligations;
- plan and construct the Federal transmission system to meet Federal and non-Federal needs;
- make minimal changes to its transmission practices as necessary to provide transmission service consistent with BPA's statutory obligations, including EPA-92; and
- possibly seek additional capital borrowing authority through new legislation if its planned capital expenditures were to exceed current borrowing authority.

The Status Quo alternative has the following four modules (see section 2.3, below, and tables 2.3-1 and 2.3-2) "built in" to its description:

FW-1 (Status Quo)

RD-5 (Variable Industrial Rate)

DSI-1 (New Firm Contracts)

CR-1 ("Fully Funded" Conservation)

2.2.2 BPA Influence (BPA Exercises Market Influence to Support Regional Goals)

BPA would go beyond the requirements of the Northwest Power Act to exercise its position in the regional power market to directly promote compliance by its customers with the Act's goals. BPA would continue its role as long-term planner for the coordinated resource and transmission development necessary to meet its customers' needs; share system development costs and risks with customers complying with regional plans through long-term firm power contracts; and direct its resource development and operations to support the goals of the Council's Power Plan and F&W Program. It would also apply incentives or conditions to power and services to promote compliance with the Plan and Program.

To fulfill the direction of this alternative, BPA would:

- market competitively priced "unbundled" power products or services;
- offer "rebundled" services to customers that comply with the Council's Power Plan and F&W Program;
- include both tiered and streamflow-based rates in power rate structures;
- emphasize rate incentives and rate designs that support BPA/Council goals for resource operations and development;
- assign either discounts for power/transmission rates for those complying with the Power Plan and F&W Program, or surcharges for those not complying;
- take a strategic approach to extraregional marketing, using the flexibility of the Federal power system to supply products designed to meet the needs of extraregional customers where possible;
- acquire resources, including renewables and conservation, according to Northwest Power Act/Power Plan priorities, as needed to serve BPA customer load;

³ Pricing based on average embedded costs refers to the total incurred cost of a product divided by the total number of units sold. Incremental cost pricing is based on the cost of new resources constructed or acquired for providing electric power.

- potentially require review and approval of customers' least-cost resource acquisition plans by BPA and/or the Council;
- include transmission costs in power rates, with a discount for integrating Northwest Power Act priority resources;
- plan and construct transmission facilities based on Federal needs and the needs of customers who comply with Council plans, assuming that EPA-92 provisions regarding actions in the public interest allow BPA to place conditions on transmission access that would favor resources consistent with Council planning; and
- take cost-cutting measures to reduce revenue requirements.

Modules (see section 2.3) built into the BPA Influence alternative:

- FW-2** (BPA-Proposed Fish and Wildlife Reinvention)
- RD-3** (Streamflow Seasonal Rates - Historical)
- RD-4** (Eliminate Irrigation Discount)
- RD-7** (Resource-Based Tier 1)
- DSI-2** (Firm Service in Spring Only)
- CR-1** ("Fully Funded" Conservation)
- CR-2** (Renewables Incentives)
- CR-3** (Maximize Renewables Acquisition)
- CR-4** ("Green" Firm Power).

2.2.3 Market-Driven BPA [Proposed Action]

BPA would fully participate in the competitive market for power, transmission, and energy services, and use success in those markets to ensure the financial strength necessary to fulfill its mandates under the Northwest Power Act and BPA's other organic statutes. BPA would become a more active participant in the west coast electric power and transmission market. The agency would share power system development costs and risks with full requirements customers under long-term contracts through its obligation to meet their loads, but would offer more flexible arrangements under either long-term or short-term agreements. This alternative presumes that a more competitive regional wholesale power market will develop, facilitated by greater transmission access under EPA-92.

To fulfill the direction of this alternative, BPA would:

- market competitively priced, unbundled power products and services;
- offer rebundled firm power service packages to all PNW utility customers;
- continue to offer cost-based firm requirements power products that meet Northwest Power Act obligations;
- in the short term, adopt new rates without using a tiered rate structure;
- in the long term, adopt tiered and seasonally differentiated rates for firm requirements power, with declining Tier 1 allocations to DSIs over time;
- take a strategic approach to extraregional marketing, using the flexibility of the Federal power system to supply products designed to meet the needs of extraregional customers where possible;
- expand extraregional marketing to include non-traditional business partners, such as Mexico, IPPs, brokers, and marketers outside the PNW;

- acquire resources only to complement existing resources and satisfy market demand;
- undertake conservation reinvention by attaining planned energy conservation savings (under the Council's Power Plan) through marketing of energy conservation services, BPA-sponsored market transformation efforts to remove obstacles to commercialization of cost-effective measures, utility-initiated demand-side management (DSM) efforts, and, in the long term, tiered-rate price incentives;
- rely to some extent on planned market purchases rather than on long-term acquisition of generating resource output to meet any increases in BPA loads;
- review planned and existing generation projects and terminate those that are more costly than power purchases or new resources;
- include in power rates the embedded transmission costs of delivering Federal power to existing points of delivery;
- price wheeling rates consistent with national transmission pricing policy;
- plan and construct transmission facilities based on (1) Federal system needs, (2) requests for non-Federal power transmission, and (3) market opportunities;
- provide transmission access to wholesale power producers and purchasers, including DSIs;
- seek access to necessary transmission paths outside the region; and
- take cost-cutting measures to reduce revenue requirements.

Modules (see section 2.3) built into the Market-Driven alternative:

- FW-2** (BPA-Proposed Fish and Wildlife Reinvention)
- RD-1** (Seasonal Rates - Three Periods)
- RD-4** (Eliminate Irrigation Discount)
- RD-6** (Load-Based Tier 1)
- DSI-3** (Declining Firm Service)
- CR-4** ("Green" Firm Power)

2.2.4 Maximize BPA's Financial Returns

BPA would act to maintain a competitive position in the regional energy market while maximizing its financial return. The agency would operate more like a private, for-profit business, and would manage its resources to produce the most revenue while continuing to fulfill the energy conservation and fish and wildlife requirements of the Northwest Power Act. This presumes major changes in BPA organic legislation and emphasizes obtaining the highest net revenue for marketable products and minimizing costs for activities that do not produce revenue. It also assumes that current statutory restrictions on BPA ratemaking are modified to permit BPA to collect revenues in excess of total costs and reserve needs.

To carry out this alternative, BPA would:

- offer power system products under long- or short-term agreements, with risks to BPA reflected in pricing and borne by purchasers;
- offer unbundled products and services to all customers, to the extent that these products and services would be competitive in the market when priced to recover their cost plus a return;
- design products and services so as to be sold at highest market value (regional requirements service or surplus market);

- set prices to emphasize maximum return within the constraints of the market;
- emphasize flexibility in rate structure to enable BPA to respond to market prices;
- acquire additional resources only if their revenues would exceed their costs;
- review planned and existing generation projects and terminate those that are more costly than power purchases or new resources;
- implement conservation programs under the Power Plan only if they return their costs, allowing 10 percent less return compared to other resource acquisitions;
- provide transmission access and construct additional transmission capacity, consistent with BPA's statutory obligations, including EPA-92;
- price existing and new transmission products to maximize BPA's transmission and wheeling revenues, e.g., price transmission separately from power, based on customers' locations;
- apply excess revenues to building financial reserves, repaying Treasury debt, financing research and development, supporting BPA functions, or reducing rates in the next general rate case;
- take cost-cutting measures to reduce revenue requirements; and
- allocate capital where it would receive the best monetary return.

Modules (see section 2.3) built into the Maximize Financial Returns alternative:

FW-3 (Lump-Sum Transfer)

RD-4 (Eliminate Irrigation Discount)

DSI-5 (100-percent Firm Service)

CR-4 ("Green" Firm Power)

2.2.5 Minimal BPA Marketing

BPA would withdraw from the competitive power market, at least with respect to serving customer load growth, and would confine its activities to meeting its revenue requirements through the long-term sale of current Federal system capability to current customers, while continuing to fulfill the fish and wildlife requirements of the Northwest Power Act. This alternative presumes changes in BPA's organic legislation. BPA would function much like other Federal power marketing administrations, which are involved primarily in selling from a limited pool of low-cost power resources to eligible customers. Business decisions would be oriented toward long-term stability and administrative simplicity, favoring long-term (20-year) take-or-pay transactions priced to meet revenue requirements.

To carry out this alternative, BPA would:

- limit its activities to maintenance of existing resources, and sales of power and services from those resources;
- sell bundled Federal system power and transmission capability to customers under long-term agreements, with service to DSIs limited to excess firm capability over preference loads, and declining as preference loads grow;
- offer any surplus power from resource capability above requirements loads, as available, to regional and extraregional markets;
- continue current rate structures;
- price goods and services to recover costs for existing facilities;
- not replace generating resources as they were retired;

- not acquire any new resources, including conservation;⁴
- provide requested transmission access in excess of the amounts of transmission capacity needed to deliver Federal resources to loads;
- not develop any transmission voluntarily;
- construct new facilities only when ordered by the Federal Energy Regulatory Commission (FERC) to serve requests for transmission access (see section 2.4.4.2);
- base transmission and wheeling prices on embedded costs; and
- take cost-cutting measures to reduce revenue requirements.

Modules (see section 2.3) built into the Minimal BPA alternative:

FW-3 (Lump-Sum Transfer)

DSI-3 (Declining Firm Service)

2.2.6 Short-Term Marketing

BPA would emphasize short-term (sales for terms of 5 years or less) marketing of power and transmission products and services, while continuing to fulfill energy conservation and fish and wildlife requirements of the Northwest Power Act. BPA would continue to serve its customers' firm power requirements, including load growth, under their existing power sales contracts. However, after their existing contracts expire, BPA would offer such service to those customers only under *short-term* arrangements. All BPA marketing activities would focus on sales and cost recovery over the short term.

To carry out this alternative, BPA would:

- offer unbundled products and services to enhance flexibility to respond to market opportunities;
- sell products for 5-year terms with permissive termination provisions;
- establish umbrella agreements with its regional and extraregional trading partners to set up a contractual framework for power purchases and sales and transmission services;⁵
- base pricing for both power and transmission on cost and market competitiveness;
- adopt tiered and seasonally differentiated rates to promote efficiency in resource development (conservation and generation);
- set rates for 5-year periods matching the duration of sales;
- support most sales in excess of Federal system capability, using statutory short-term purchase authority;
- make long-term resource acquisitions only if economically justified in support of long-term plans or short-term marketing—for example, to improve the marketability of existing resources;
- attain energy conservation savings through tiered rates, marketing conservation services, and market transformation efforts;
- plan and construct transmission facilities to enhance marketing opportunities;
- keep transmission access open, but provide access priority to meeting regional load; and

⁴ Under the Northwest Power Act, conservation acquisitions are required only if BPA acquires new resources.

⁵ Agreements would allow rapid response to market conditions and opportunities; they would set general conditions for transactions; rate schedules would then be used to set price, quantity, and delivery terms.

- transmission would be unbundled from power rates and BPA may use opportunity cost for pricing wheeling rates to compensate for lost marketing revenues over constrained transmission facilities.

Modules (see section 2.3) built into the Short-Term Marketing alternative:

- FW-2** (BPA-Proposed Fish and Wildlife Reinvention)
- RD-4** (Eliminate Irrigation Discount)
- RD-8** (Market-Based Tier 2)
- DSI-3** (Declining Firm Service)

2.3 Description of Policy Modules

In response to key issues raised during the review of the DEIS, as well as in response to readers' interest in testing specific policy choices, the EIS study team identified a series of policy options ("**modules**") that can be integrated with one or more of the alternatives. (For actual comments on the DEIS and responses, see Appendix E.) These modules are grouped according to focus, in four areas: Fish and Wildlife (FW), Rate Design (RD), Direct Service Industry Service (DSI), and Conservation/Renewable Resources (CR). They are first described below (section 2.3.1). The following section (2.3.2) addresses the ways they can be applied to each alternative.

2.3.1 Module Descriptions

Complete descriptions of each module appear below. Table 2.3-1 provides summary descriptions for easy reference.

2.3.1.1 *Fish and Wildlife*

Under the provisions of the ESA and the Northwest Power Act, and repayment requirements to other Federal agencies that undertake fish and wildlife activities, BPA has responsibilities to support recovery from impacts attributed to hydropower development. However, the costs of carrying out those actions have proved to be substantial and increasing, and the results not always clear. The issues of responsibility and accountability, BPA's ability to predict and stabilize its fish and wildlife costs, and the administrative mechanisms for distributing fish and wildlife dollars, shape the modules below. For more on these issues, please see section 2.4.5.

Status Quo (FW-1)

BPA would continue to fund fish and wildlife measures without systematically requiring definition of biological results or plans for monitoring and evaluation. BPA would leave decisions on funding amounts and priorities to the Council, agencies, and Tribes. BPA would continue to administer the funds. Accountability and responsibility for achieving results from fish and wildlife program measures would continue to be debated in the region.

BPA-Proposed Fish and Wildlife Reinvention (FW-2)

BPA would work with the Council, NMFS, and other Federal agencies to determine funding priorities based on estimated results, and participate in monitoring projects to determine their progress toward planned results, as input to decisions on continued funding. BPA would negotiate multi-year agreements with regional entities for a base level of funding, indexed to BPA's maximum sustainable revenue level (see section 2.6.1), that meet its various fish and wildlife responsibilities. In addition, BPA would establish a gain-sharing plan to use a percentage of revenues that exceed rate case projections to establish a trust (see below) to fund additional fish

Table 2.3-1: Key to Analytical Modules in the Business Plan Supplemental Draft EIS

Fish and Wildlife (FW)	
Status Quo (FW-1)	BPA continues to fund fish and wildlife measures without systematically requiring demonstrated effectiveness.
BPA-Proposed Fish and Wildlife Reinvention (FW-2)	BPA works with other entities to set priorities for funding and to monitor results; establishes multi-year base-level funding agreements keyed to BPA maximum sustainable revenues; establishes gain-sharing trust for excess revenues; uses gain-sharing to fund additional activities.
Lump-Sum Transfer (FW-3)	BPA transfers responsibility and control for implementing fish and wildlife actions to fish/wildlife agencies and Tribes via trusts or lump sum transfers. Would likely require Federal legislation. Adjustments limited to review/renewal opportunities provided in trust/transfer agreement.
Rate Design (RD)	
Seasonal Rates - Three Periods (RD-1)	BPA power rates for utility customers have three seasonal periods of 3-5 months each. Goal: achieving closer seasonal linkage between BPA's wholesale power rates and the market price of power.
Streamflow Seasonal Rates - Real Time (RD-2)	BPA power rates change monthly, based on projected current-year streamflows.
Streamflow Seasonal Rates - Historical (RD-3)	BPA's power rates change monthly, based on historical average streamflows.
Eliminate Irrigation Discount (RD-4)	BPA eliminates current discount to farmers who use electricity for irrigation or drainage (April through October).
Variable Industrial Rate (RD-5)	This rate would be extended past 1996.
Load-Based Tier 1 (RD-6)	BPA bases amount of Tier 1 allocation on a percentage of historical loads for each customer. Federal system capability serving Tier 1 loads is fixed. Purchased power makes up any seasonal gap.
Resource-Based Tier 1 (RD-7)	BPA bases Tier 1 size on a fixed percentage of Federal Base System (FBS) firm capability. Amount varies monthly. All additional power would be purchased at Tier 2.
Market-Based Tier 2 (RD-8)	BPA sets the Tier 2 rate slightly below the price of long-term power or the cost of alternative resources that existing customers could purchase for use as an alternative to BPA power; Tier 1 may absorb Tier 2 costs.
Direct Service Industries Service (DSI)	
Renew Existing Firm Contracts (DSI-1)	In 2001, DSIs are offered new power sales contracts that incorporate the major elements of current contracts.
Firm Service in Spring Only (DSI-2)	DSIs are offered firm service for all contracted load during the spring flow augmentation period; for the remainder of the year, load is 100-percent interruptible after a specified notice period.
Declining Firm Service (DSI-3)	The amount of firm service offered to DSIs from Tier 1 power declines over time: at the same rate as the decline in the percentage of Tier 1 power available to preference customer loads; by providing a recallable Tier 1 service to DSIs; or by a pre-determined rate of reduction of Tier 1 service.
No New Firm Power Sales Contracts (DSI-4)	When current contracts expire in 2001, DSIs are not offered any contracts for firm power supply; any power DSIs purchased from BPA would be nonfirm or surplus firm.
100-Percent Firm Service (DSI-5)	BPA provides all four quartiles of the DSI load as firm (non-interruptible) power.
Conservation/Renewable Resources (CR)	
"Fully Funded" Conservation (CR-1)	BPA funds conservation at total spending levels comparable to those under Status Quo.
Renewables Incentives (CR-2)	BPA offers price incentives or discounts to renewable resource proposals to stimulate development/further commercialization of renewable resources (especially wind and geothermal) already underway.
Maximize Renewables Acquisition (CR-3)	BPA acquires all available commercial renewable resources, regardless of cost.
"Green" Firm Power (CR-4)	BPA offers power from renewable resources at cost, including services comparable to those included in Tier 2 power.

and wildlife activities. BPA would maintain responsibility for administering its fish and wildlife funds and share accountability for results.

A BPA-established Ecosystem Trust would receive a percentage of excess BPA revenues in years when actual revenues exceed rate case projections. The Trust, which would supplement a base level of fish and wildlife program funding, would be administered by representatives from regional fish and wildlife agencies and Tribes and BPA. Responsibility and accountability for expenditure of those funds would be shared by those who administer the trust.

Lump-Sum Transfer (FW-3)

BPA would transfer responsibility and accountability for implementing fish and wildlife actions to fish/wildlife agencies and Tribes via trusts or lump-sum transfers. Transferees would be responsible for setting funding priorities and monitoring how the money is spent. Such a transfer would likely require Federal legislation. Adjustments would be limited to review/renewal opportunities provided in the trust/transfer agreement. BPA would not be held responsible or accountable for project results.

2.3.1.2 Rate Design

The rate design policy modules presented below are intended to address rate design issues of special concern.

Three of the modules (RD-1, -2, and -3) address seasonal differentiation of rates. The concept, which is addressed in more detail in Appendix B, assumes that by setting different prices at different times of the year, customers can make better-informed (and perhaps more economically efficient) decisions about electric energy supply or use. The modules include seasonal differentiation, which prices BPA power parallel to the market value of power during each of three periods of the year: spring flow augmentation, summer and fall, and winter. The streamflow-based modules reflect a desire to price BPA power according to its value in providing flows to support fish migration.

The Eliminate Irrigation Discount module (RD-4) addresses the concern that the discount stimulates both electricity and water use by irrigators.

The aluminum DSI variable industrial (VI) rate (addressed in module RD-5) was established as a mechanism to share the aluminum price risk between BPA and the industry so that BPA could maintain DSI loads and power sales revenues during periods of low aluminum price, in exchange for higher power prices during periods of high aluminum prices. The basic concern is whether the uncertainty that the VI rate adds to BPA's revenue forecasts is justified by the rate's effect in maintaining DSI loads. This concern is closely related to other issues surrounding DSI service (see section 2.3.1.3, DSI modules).

The tiered rate modules (RD-6, -7, and -8) encompass different points of view concerning the possible application of tiered rates to BPA firm power sales. During the discussions which defined a tiered rate concept for BPA's 1995 rate proposal, participants advocated different positions concerning the relationship between the rate tiers and the resources supplying the power sold under each tier, as well as the ability of the lower-priced tier to pay the costs of resources supplying the higher-priced tier.⁶ The tiered rate modules are intended to explore the effects of these different concepts.

Seasonal Rates - Three Periods (RD-1)

BPA power rates for its utility customers would have three seasonal periods of 3 to 5 months each, with a goal of achieving closer linkage between BPA's wholesale power rates and the price of power on the open market for each seasonal period. This scheme would apply only to the energy charge of the Priority Firm, Industrial Firm, and New Resource rate schedules. The demand charge might be seasonalized to reflect the value of the service used in each seasonal period.

⁶ The 1995 rate proposal no longer includes tiered rates.

Streamflow Seasonal Rates - Real Time (RD-2)

BPA power rates would change monthly, based on current-year streamflows. Projected rates would be published each July 1 for the upcoming 12 months. Those rates would be based on a combination of the following factors: expected level of streamflow as predicted from beginning-of-year reservoir levels hydro data, actual streamflows, and meteorological and other data. Each month, streamflow would be recalculated for the next month and all remaining months of the year, and rates would be revised accordingly, taking into account only the change in estimated streamflows.

A balancing account would operate to capture any over/under collections due solely to streamflow-related variances. The account would operate as follows: when actual streamflows for the preceding month are known, the difference between the projected and actual streamflows would be calculated and converted into a dollar value. The size of the rate change could be capped for stability purposes. This amount would be added to or subtracted from the following month's rate as a surcharge or rebate. This seasonalization scheme would apply to all power sold by BPA. The balancing account would apply only to BPA's firm power customers.

Streamflow Seasonal Rates - Historical (RD-3)

BPA's power rates would change monthly, based on historical average streamflows. During months with high historical streamflows, rates would be low; during months with low flows, rates would be high.

Eliminate Irrigation Discount (RD-4)

BPA would eliminate the current discount to farmers who use electricity for agricultural irrigation or drainage from April through October.

Variable Industrial Rate (RD-5)

This rate, currently scheduled to expire in 1996, would be extended as an available DSI rate. The VI Rate links the rate charged to DSIs to the price of aluminum on world markets, within a band of rates. The goal of the rate is to stabilize BPA's DSI loads by reducing power costs to DSIs when aluminum prices are low, and increasing costs when aluminum prices are high.

Load-Based Tier 1 (RD-6)

BPA would develop the size of Tier 1 based on a percentage (e.g., 90 percent) of historical loads for each customer. The amount of Federal system capability serving Tier 1 loads would be fixed and would not increase. If that capability were not enough to serve the Tier 1 loads, purchased power would be added to make up the difference, and the costs of those purchases would be included in calculating the rate level.

Resource-Based Tier 1 (RD-7)

BPA would base the size of Tier 1 on a fixed percentage of Federal Base System (FBS) firm capability. The size of the resource-based Tier 1 would vary month-to-month, based on streamflows and the availability of other FBS resources. All additional power would be purchased at Tier 2. The allocation of this power would be based on the customers' historical loads. Purchased power would not be allocated to Tier 1.

Market-Based Tier 2 (RD-8)

BPA would set the Tier 2 rate slightly below the price of long-term power or the cost of alternative resources that existing customers could purchase for use as an alternative to BPA power. If necessary, Tier 1 rates would be adjusted to recover costs not recoverable from Tier 2 sales.

2.3.1.3 Direct Service Industries Service

BPA's power sales to DSIs are a subject of considerable contention in the PNW. Those who question the rates and provisions of BPA's service to DSIs tend to see the DSIs as large consumers of low-cost power that would otherwise be available to preference utilities, or that might be sold to other purchasers at a higher price. Those who support DSI service view the DSIs as large, stable loads that can be served at lower cost than utility loads, and that provide flexibility and reserves that complement the hydro system and justify the rates to the DSIs. The DSI modules test a variety of service arrangements with DSIs to assess how DSIs and BPA would react to these forms of service.

Renew Existing Firm Contracts (DSI-1)

When their current contracts expire in 2001, DSIs would be offered new power sales contracts that incorporate the major elements of current contracts (firm service for the lower three quartiles of their load, an interruptible first (top) quartile, and BPA interruption rights to maintain system stability).

Firm Service in Spring Only (DSI-2)

DSIs would be offered firm service for all of their contracted load during the spring flow augmentation period (roughly April through July); at other times, DSI load would be 100-percent interruptible after a specified notice period.

Declining Firm Service (DSI-3)

The amount of firm service offered to DSIs from Tier 1 power would decline over time in one of three ways: at the same rate as the decline in the percentage of Tier 1 power available to preference customer loads; by providing a recallable Tier 1 service to DSIs; or by a pre-determined rate of reduction of Tier 1 service.

No New Firm Power Sales Contracts (DSI-4)

When their current contracts expire in 2001, DSIs would not be offered any contracts for firm power supply; any power that DSIs purchased from BPA would be nonfirm.

100-Percent Firm Service (DSI-5)

BPA would provide all four quartiles of the DSI load as firm (non-interruptible) power.

2.3.1.4 Conservation/Renewable Resources

Concerns about resource development center around conservation and renewable resources. Four modules assess potential policy choices on these issues.

The first (CR-1) continues conservation incentive payments as a way to achieve the Council's conservation goals. This module contrasts with conservation reinvention under the proposed action, which is designed to achieve the Council goal through price signals, market transformation, and a new energy service charge which provides support similar to that of the incentive payments.

The other three modules (CR-2, -3, and -4) are different methods by which BPA might choose to support the development of renewable power generation in the PNW. These modules are intended to show the effects of BPA involvement in renewable development in keeping with the resource priorities of the Northwest Power Act.

“Fully Funded” Conservation (CR-1)

BPA would fund conservation at total spending levels comparable to those under Status Quo, potentially resulting in additional conservation above the amounts resulting from reinvention of BPA conservation programs and tiered rate price signals.

Renewables Incentives (CR-2)

For its own resource acquisitions, BPA would offer price incentives to renewable resource proposals to induce greater amounts of renewable resource development and acquisition. BPA would pay 10 percent over the cost of equivalent nonrenewable resources—an amount comparable to that offered for conservation in the calculation of cost-effectiveness under the Northwest Power Act. For renewable resources developed by BPA customers, BPA would discount the package of power system services (e.g., transmission and reserves) that supported the resource by 10 percent of the resource cost. The goal would be to stimulate development and further commercialization of renewable resources, such as wind or geothermal energy, already under development in the region. Under tiered rates, Tier 2 prices would reflect the costs of BPA renewable acquisitions, while transmission and services rates would be adjusted to make up for the discount to customers’ renewable resource acquisitions.

Maximize Renewables Acquisition (CR-3)

To accelerate market transformation for renewable resources, BPA would acquire all available renewable resources, regardless of cost in relation to other resources. This module would result in acquisition of substantially more renewable resources (310 to 440 aMW, excluding projects already committed) than the amount proposed under BPA’s 1992 Resource Program. Under tiered rates, Tier 2 prices would reflect the costs of BPA renewable resource acquisitions.

“Green” Firm Power (CR-4)

BPA would offer power from renewable resources at cost, including services comparable to those included in Tier 2 power. Utility customers could purchase this power to respond to consumer support for environmentally preferable energy resources (even if they cost more than conventional resources). As a developer, BPA would provide financial support and resource management to permit individual customers to purchase smaller shares instead of trying to sponsor whole resource projects themselves.

2.3.2 Modules as They Apply to EIS Alternatives

The modules listed under each alternative above (sections 2.2.1 through 2.2.6) are basic to the concept that defines each alternative (that is, they are intrinsic to those alternatives). For instance, DSI-3 (Declining Firm Service) is an intrinsic part of the Short-Term Marketing alternative. However, other modules—for instance, DSI-2 (Firm Service in Spring Only)—could be substituted as a variable element. The matrix in table 2.3-2 identifies which modules are intrinsic and which variable for each alternative; it also identifies which are mutually exclusive (cannot apply at the same time). Some modules cannot “fit” in some alternatives. For instance, no variables are associated with the Status Quo alternative because it is the “No Action” alternative and by definition would not incorporate anything different.

Other “no fit” combinations are as follows:

- **Minimal BPA.** CR-1, CR-2, CR-3, and CR-4 would not apply to Minimal BPA because BPA would not acquire resources, so would not have any opportunity to implement these modules. DSI-1 is not appropriate because BPA could not commit to providing service to all of the DSI loads due to the limits of its resources and the priority of preference loads. DSI-5 is not appropriate because resources are too limited for implementation. RD-6, RD-7, and RD-8 are not appropriate because tiering would not be meaningful for allocations of a fixed resource base:

customers' allocations would be fixed and their average rates would be the same regardless of tiering.

- **Short-Term Marketing.** Under this alternative, DSI-1 is not appropriate because renewal of existing contracts would conflict with the 5-year term of BPA sales under this alternative.

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Table 2.3-2: Analytical Modules in the Business Plan Final EIS

Module	Description	Alternatives					
		1. Status Quo	2. BPA Influence	3. Market- Driven	4. Maximize Financial Returns	5. Minimal BPA	6. Short-Term Marketing
FW-1	Status Quo	I	V	V	V	V	V
FW-2	BPA-Proposed Fish and Wildlife Reinvention	--	I	I	V	V	I
FW-3	Lump-Sum Transfer	--	V	V	I	I	V
RD-1	Seasonal Rates - Three Periods	--	V	I	V	V	V
RD-2	Streamflow Seasonal Rates - Real Time	--	V	V	V	V	V
RD-3	Streamflow Seasonal Rates - Historical	--	I	V	V	V	V
RD-4	Eliminate Irrigation Discount	--	I	I	I	V	I
RD-5	Variable Industrial Rate	I	V	V	V	V	V
RD-6	Load-Based Tier 1	--	V	I	V	--	V
RD-7	Resource-Based Tier 1	--	I	V	V	--	V
RD-8	Market-Based Tier 2	--	V	V	V	--	I
DSI-1	Renew Existing Firm Contracts	I	V	V	V	--	--
DSI-2	Firm Service in Spring Only	--	I	V	V	V	V
DSI-3	Declining Firm Service	--	V	I	V	I	I
DSI-4	No New Firm Power Sales Contracts	--	V	V	V	V	V
DSI-5	100-Percent Firm Service	--	V	V	I	--	V
CR-1	"Fully Funded" Conservation	I	I	V	V	--	V
CR-2	Renewables Incentives	--	I	V	V	--	V
CR-3	Maximize Renewables Acquisition	--	I	V	V	--	V
CR-4	"Green" Firm Power	--	I	I	I	--	V

I = Intrinsic V = Variable -- = Not Applicable

Mutually exclusive: All FW modules; RD-1, -2, and -3; RD-6, -7, and -8; DSI-1 with -2 and -3; DSI-4 with all DSI modules.

2.4 Issues

BPA's choice of direction under the Business Plan involves numerous issues. Some that relate directly to modules are discussed in section 2.3, above, and are not repeated here. The following discussion describes more than 20 issues for which BPA's actions may vary among the alternatives. They represent the heart of the decisions BPA will make on how to conduct business in the future. Table 2.4-1, at the end of this section, shows how they are treated across the alternatives. Market responses to these issues are evaluated in section 4.2.

2.4.1 Products and Services

2.4.1.1 Bundling or Unbundling of BPA Power Products and Services

Traditionally, BPA has provided a variety of power system products to its firm requirements customers as a single “bundle” sold at the PF power rate. Products include energy and capacity, and services such as load shaping, load following, or (for generating customers) backup services to support generating resources. When products and services are “unbundled” and sold separately, customers pay for them in proportion to the amounts they use. This arrangement provides more choices and, potentially, an incentive for more efficient use. Unbundling provides an opportunity for any customer to purchase specific products or services to meet the particular needs of its system or loads. As the market for unbundled power products and services develops and other needs are identified, BPA might offer new products. Unbundled products might be “rebundled” into packages to meet the needs of particular groups of customers. Under any alternative, customers with current BPA power sales contracts may elect to continue receiving products under their current power sales contracts until they expire in 2001. Appendix A lists potential products and services BPA might offer.

2.4.1.2 Surplus Products and Services

BPA sells surplus power products and services, both long-term and short-term. BPA offers prospective products and services first to its customers in the PNW and then to purchasers outside the region, under the requirements of the Act of August 31, 1964, P.L. 88-552 (the Northwest Preference Act), and sections 5(f) and 9(c) of P.L. 96-501, the Northwest Power Act. The larger generating utilities are the principal purchasers of surplus both within and outside the region. As the electric power industry changes, it might be desirable for BPA to expand surplus marketing to current purchasers and to do business with new parties, including IPPs/brokers/marketers, and to offer more flexible products and terms for surplus sales to increase revenues and expand markets. BPA may choose to purchase power in advance of its firm load requirements and use those purchases flexibly for either firm load service or for resale as surplus. Some modifications may require legislative changes to BPA's organic statutes.

2.4.1.3 Scope of BPA Sales

Currently, BPA sells power products and services within the PNW to public, cooperative, and investor-owned utilities; Federal agencies; and DSIs; as well as to utilities outside the region. Assuming changes in BPA's statutes, potential customers include utility pools or cooperatives, IPPs/brokers/marketers, new Federal agencies either within or outside the region, and retail consumers, such as large industries now served by utilities. Expanding the scope of BPA sales would enlarge the market for BPA products and services and add BPA to the pool of suppliers competing for those loads, possibly promoting more efficient production and delivery of electric power. BPA's sales would only increase if BPA's products, services, and terms were attractive compared to those of other suppliers. Wider BPA sales could increase revenues and increase BPA's need to acquire new generating resources. If BPA's products were less attractive, reduced sales could lead to a BPA surplus, reduced revenues, and difficulty in meeting BPA's Treasury repayment and other responsibilities. Any expansion in the scope of BPA sales would have to be permissible under laws governing BPA's actions. Some expansions would require changes in existing statutes.

2.4.1.4 Determination of BPA Firm Loads

The determination of BPA firm loads is a critical element in BPA's operational and resource planning. It dominates decisions about resource acquisitions or the availability of short- or long-term surplus power. It also drives, directly or indirectly, all transmission development. BPA firm loads are established under BPA's power sales contracts. For some customers, the firm load on BPA is the customer's actual load, minus the customer's firm resources (if any) dedicated to load. For others, firm load is a contracted purchase amount of power established by the annual planning process, and based on 7 years' notice. Currently, if customers export power out of the region such that BPA's firm power load obligations increase, those customers may be subject to a reduction in BPA's firm loads obligation. DSI firm loads are based on the maximum amount of power to which they are entitled under their contracts, with adjustments for planned operations and first (top)

quartile interruptibility. Purchasers under BPA's current power sales contracts are not permitted to resell Federal power. If BPA does not have sufficient power to meet its firm obligations, BPA may declare an insufficiency, assuming certain conditions are met. Available Federal power would then be allocated according to a formula that gives priority to regional preference utilities or to those customers that supplied BPA with a resource. Other BPA firm obligations exist under other contracts for capacity, power exchanges, and other transactions.

More flexible arrangements might be desirable to respond to the increasingly competitive and deregulated electric power market. Allowing resale of Federal power could allow BPA customers to trade their Federal firm power rights for other products and services, and might encourage the transfer of energy saved through conservation programs. But if BPA permitted resale, it would have to define its obligation in terms other than actual loads, or resale could increase BPA firm loads. A definition of BPA firm load obligation that allowed resale would also have to protect BPA from increased obligations to utilities exporting power.

BPA firm load obligations are also complicated by the treatment of DSI top-quartile loads as firm for operational purposes but not for planning. Eliminating this inconsistency under current contracts would reduce uncertainty in the amount of power BPA is obligated to provide. Changes in the market for aluminum and technological changes in aluminum manufacturing also contribute to the uncertainty of DSI loads. New contracts that eliminate quartiles would also eliminate this uncertainty. The amount of power available to DSIs is likely to change over time under new contracts. A similar operational challenge is the potential for BPA to exercise its right to deliver power in lieu of exchanging power under the Residential Power Exchange Program. Doing so could increase BPA's actual total firm power load service obligations over its present obligations; it could reduce the impact of DSI or requirements customers that reduce the load on BPA.

2.4.1.5 Marketing to Support BPA System Stability and Power Quality

Quality of service is closely related to reliability. Except for DSIs, BPA serves all of its firm power customers under the same electric utility industry standards of reliability, which are designed to minimize the chance of interruptions in service. The reliability criteria set standards of performance for equipment and for quality of service. Some variations in the quality of service arise from specific circumstances. For instance, when a customer is served over a single radial transmission line, standards allow for more interruptions than where more than one line can serve the load. The DSIs have a discounted power rate, but, in return, BPA may interrupt service to them in order to maintain service to other loads. The interruptible portion of their loads provides reserves for system stability and resource outages. Aside from these variations, BPA's customers all receive service at a level of quality consistent with applicable standards.

To provide more flexibility to customers and to expand the ability to obtain reserves from loads for system stability and resource outages, BPA might allow customers to choose among different levels of service quality where technically feasible, with corresponding variations in cost. Customers requiring higher-quality service would pay higher prices; those willing to accept lower quality of service would pay less. Equipment performance standards are not subject to change.

BPA's customer loads can affect power system stability and power quality due to electrical phenomena such as reactive power, which reduces the portion of a generator's output that can perform work, and harmonics, which disrupt alternating-current frequency control. The costs of measures to reduce these problems might be included in system costs paid by all customers, or addressed in billing adjustments that impose surcharges on customers whose loads place particular burdens on the power system. Alternatively, where BPA takes measures to correct such load effects, it could treat those measures as power system services which should be charged to the specific customer with the load problem.

2.4.1.6 Unbundling of Transmission and Wheeling Services

Most of BPA's existing transmission system is used to deliver power to full and partial requirements customers over the network (main grid and secondary system), fringe (generally between 115 and 69 kilovolts (kV)), and delivery (substations and transformation to distribution voltage) portions of the Federal Columbia River Transmission System (FCRTS). In addition, about one-third of BPA's transmission system is subscribed for

wheeling (transmission of non-Federal power). BPA provides firm and nonfirm transmission wheeling services. BPA designs its transmission system, according to its reliability criteria, to meet firm requirements. Nonfirm wheeling generally is curtailed first whenever a limitation in capability occurs. BPA also provides transmission services over the Northern, Eastern, and PNW/PSW Interties.

Currently, a large portion of transmission system costs is included in the rates charged for Federal power. The rest is recovered from wheeling of non-Federal power. BPA's transmission pricing is based on embedded costs. Incremental costs are sometimes charged to connect non-Federal power facilities to BPA's main grid and to wheel over certain specific transmission facilities.

Choices related to unbundling of transmission and wheeling products are closely related to choices about pricing. BPA could charge its power customers separately for power and transmission services, or could charge separately for use of specific new facilities. It also could sell as separate services transmission support services that currently are provided as a package, such as harmonics control or reactive support.

2.4.1.7 Other BPA Services

BPA marketing is currently limited to power and transmission services. BPA has developed capabilities in other areas closely related to power system services, such as financial management, environmental cleanups, communications, and other areas of specialized knowledge. BPA could market these services to its utility customers and others to increase revenues and reduce overhead costs paid from power and transmission revenues.

2.4.2 Rates

2.4.2.1 Power Pricing and Rate Attributes

Ratemaking

According to the Northwest Power Act, BPA must recover its costs sufficiently to repay the Treasury after first meeting its other costs; set rates at the lowest possible level consistent with sound business principles to encourage widespread use of electricity (per the Transmission Act); and base rates on total system costs.

As competition increases in bulk electric power markets, BPA's rates play an increasingly important role in meeting competition. Several general aspects of BPA's ratemaking will change if rates are to reflect BPA's strategic business objectives. Historically low, BPA rates are now approaching the costs of alternative power sources. BPA is looking at ways to keep from further increasing its rates.

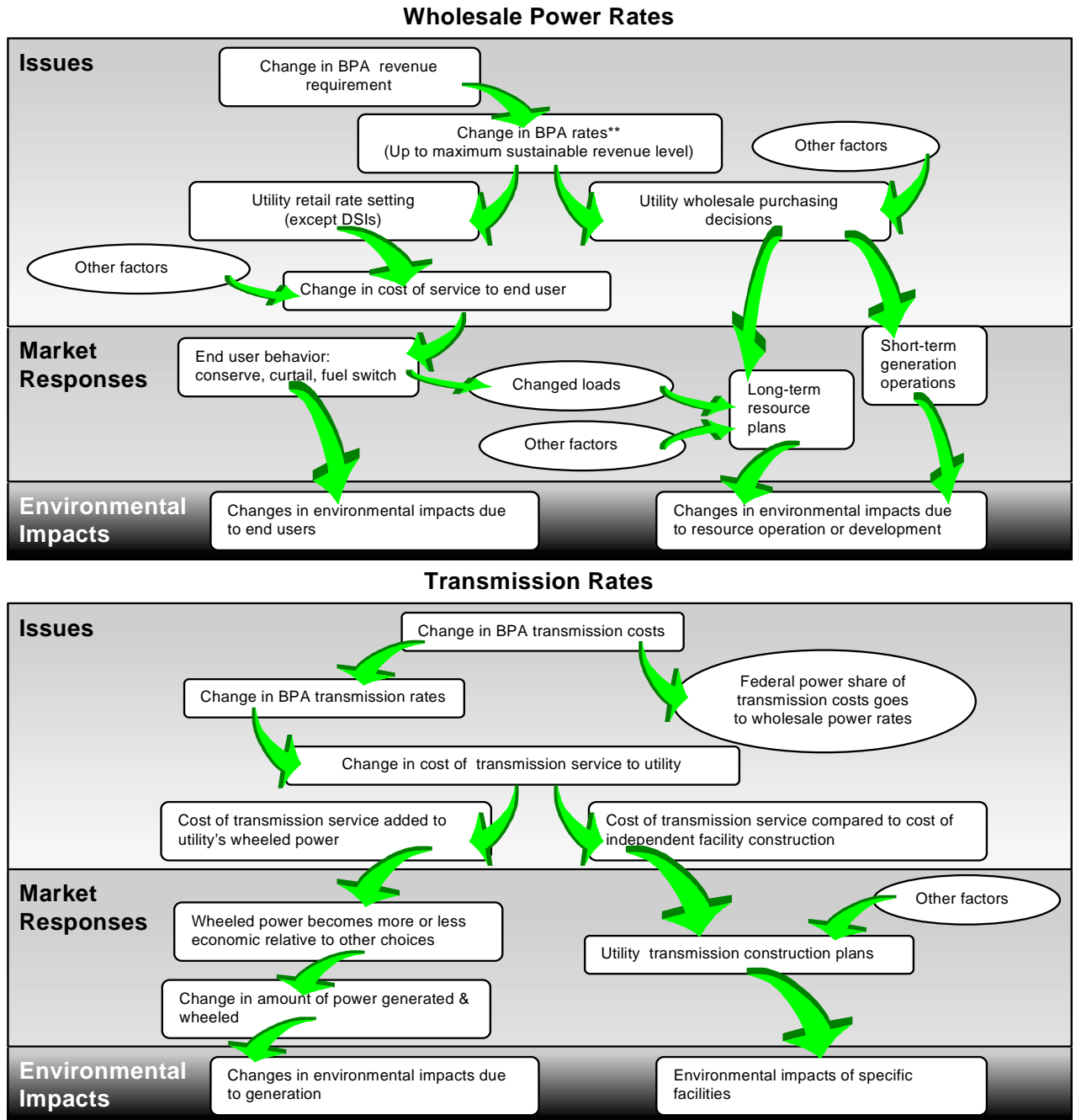
The traditional "cost-driven" approach used by BPA (as well as by other utilities) is shifting to an approach where rates are driven by the marketplace, and costs must be kept down to enable competitive rates. Market-driven rates will also affect the types of costs and other information used to set rates. (Figure 2.4-1 shows issues involved in setting both wholesale and transmission rates.) Generally, rates are set based on average embedded costs. While this practice will continue, other costs (beyond BPA's internal costs) will become more relevant to ratemaking. These other costs include opportunity costs, the costs of alternative resources, and costs facing BPA's customers that affect demand for BPA's electricity.

Tiered Rates

At present BPA sells most of its power to its customers in a single price block, where the same rate per kilowatt or kilowatt-hour applies regardless of the amount taken. BPA could change to a tiered rate structure, under which the customer would pay one price for an initial block of power, and a different price for amounts beyond the initial block. Most tiered rate proposals make the price for the first block lower than the second, on the theory that the higher price in the second tier signals the purchaser to use efficiently the power purchased. (Another term for this structure is "inverted block rates.") A tiered rate structure would allow BPA to

FIGURE 2.4-1

How Decisions on Key Issues That Change BPA Rates Affect Market Responses and Affect The Environment *



* The diagrams were developed from information in the Wholesale Power and Transmission Rate Adjustment, Final Environmental Assessment (DOE/EA - 0838, July 1993).

** When BPA's prices or rates for products and services near the level of our customers' alternative resource costs, then those customers will begin assessing their other alternatives such as self-generation or independent power producers, and may feel pressure from conservation and fuel switching by their consumers.

continue to sell firm requirements power at the average embedded cost of service, while sending a price signal to its customers about the marginal cost of power from new resources.

Three possible methods for establishing tiered rate levels are addressed by policy modules RD-6, RD-7, and RD-8 (see discussion above). These aspects of BPA's rates can affect how much a customer pays for BPA's power. For many of BPA's customers, the price of BPA's power represents the largest portion of the customer's costs.⁷ Together with the type of services BPA provides, BPA's rates, both level and design, can affect its customers' purchase decisions. This EIS examines rates because they can indirectly affect resource use and operation in the PNW through customers' market responses to them.

Other rate design alternatives are addressed in Appendix B.

2.4.2.2 Transmission and Wheeling Pricing

BPA's transmission system is used to deliver Federal power to BPA's customers and to transmit, or "wheel," non-Federal power between resources and loads. Currently, most of BPA's firm wheeling services over the network portion of the FCRTS are provided at the Integration of Resources (IR) wheeling rate. The IR rate is a "postage stamp rate," i.e., the rate is the same regardless of the distance between the integration and delivery points. If needed, a separate charge for subtransmission service is added under the Use-of-Facilities Transmission (UFT) rate schedule. The remaining firm network wheeling service is provided at the Formula Power Transmission (FPT) rate, which is distance-based. BPA could use a different mix of transmission pricing principles for its transmission services, such as increased use of incremental, opportunity, or distance-based costs for new wheeling agreements.

Transmission system users are concerned with the allocation of transmission costs between transmission of Federal power to BPA's power customers and wheeling of non-Federal power. Charges for transmission of power to BPA's power customers currently are included in BPA's power rates, as the rates are for delivered power. Wheeling is charged for transmission-only service according to wheeling rate schedules and the terms of wheeling agreements. Transmission costs included in firm power rates include "generation integration," "fringe," and "delivery" costs in addition to network transmission, so the total amount power customers are charged for transmission is greater than wheeling charges to network wheeling customers. Historically, transmission costs are allocated to power customers based on their forecasted loads. Transmission costs also are allocated to wheeling customers based on their forecasted usage. Where BPA may be wheeling for bulk power dealers, allocation of costs raises questions of how to forecast their usage when the amount of usage depends on their success in undeveloped markets.

Appendix B addresses rate designs in more detail.

2.4.3 Energy Resources

Figure 2.4-2 shows the major influences in energy resource development, including load/resource balance, the price of natural gas, and energy reserves.

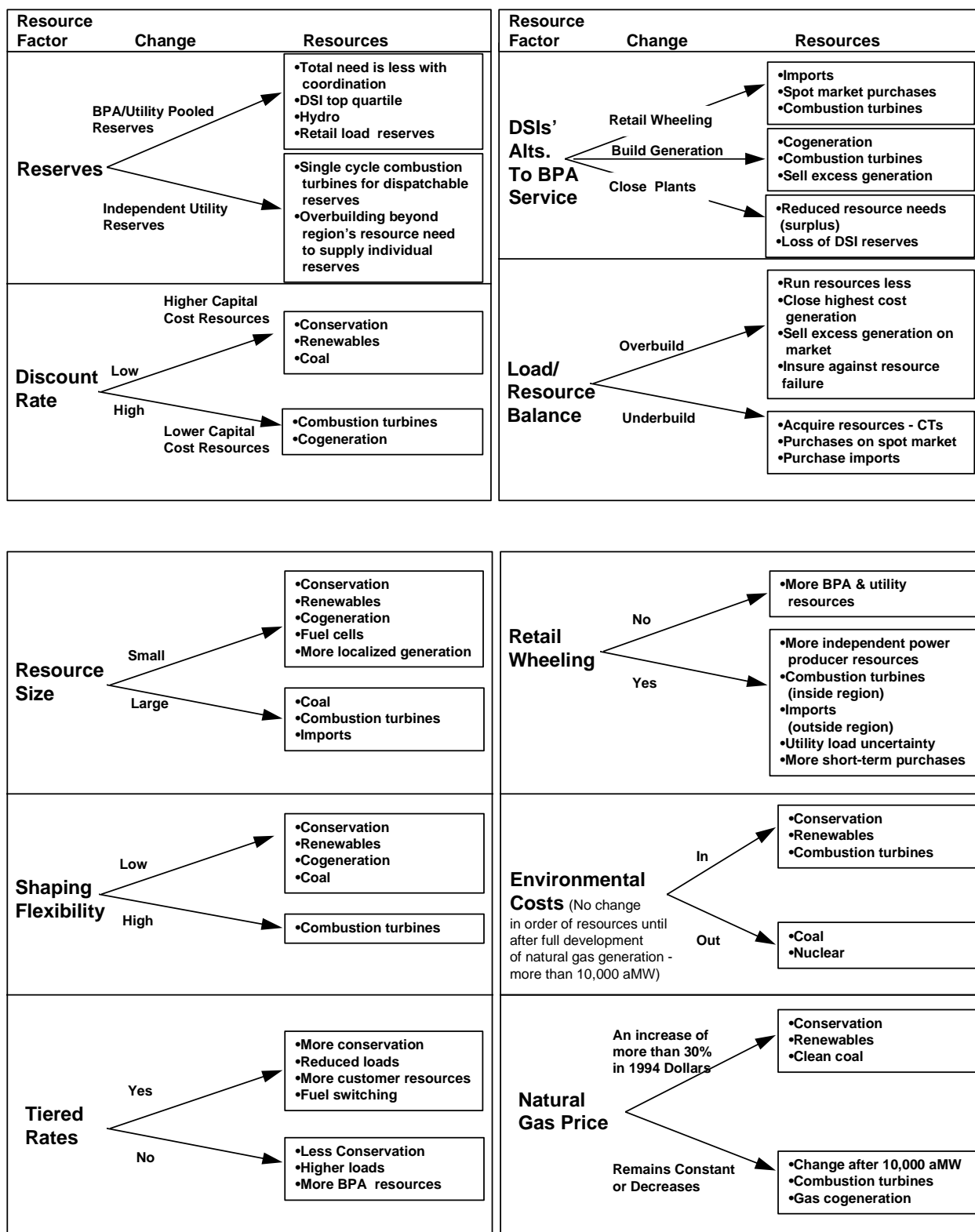
2.4.3.1 BPA Conservation Acquisition

BPA has established programs to meet its share (660 aMW) of the Council's regional conservation goal (1,530 aMW). Currently, BPA's conservation is achieved through a combination of incentive programs, research and development, and market development activities. Incentive programs account for the vast majority of BPA conservation expenditures. While BPA remains committed to achieving the energy conservation goals of the Northwest Power Act and the Council's Power Plan, other mechanisms may achieve the goals more cost effectively with lower BPA expenditures. These include the following:

⁷ Depending on the products and services purchased from BPA (and numerous other factors), cost may have little or no influence on a utility's purchasing decision and therefore result in no environmental impacts. These instances are noted where appropriate in this document. See Appendix D for a general discussion on the various factors that a utility considers when it makes power purchase decisions.

FIGURE 2.4-2

Understanding Energy Resource Development Major Influences



- pricing (such as a tiered rate structure) that provides an incentive for the purchaser to invest in energy-saving measures,
- energy service charges, and
- BPA investment in market transformation activities (including research and development) that make energy-saving products more readily available to consumers.

BPA might also offer conservation services, such as design and administration of conservation programs, to assist customers in responding to price signals.

BPA based its current proposal to postpone implementation of tiered rates in the 1995 rate case on a variety of factors in the increasingly competitive wholesale market for electricity. The price of electricity on the wholesale market has been driven by low and falling natural gas prices, both long-term and spot market. Consequently, that price is actually below BPA's Tier 2 price as proposed in the initial 1995 rate case, and near the Tier 1 price. Because BPA could no longer plan on price-induced conservation resulting from the higher Tier 2 rate, BPA modified its conservation acquisition program.

BPA remains committed to achieving the Council's goal of 660 aMW of conservation acquisition between 1992 and 2003 or any revisions to the goal that the Council may adopt in updating the Power Plan. BPA has reinvented its conservation acquisition from the previous centralized program approach to a three-pronged approach:

- DSM products and energy services,
- market transformation partnerships with regional utilities to speed up the introduction and end-user acceptance of new energy-saving technologies; and,
- an accountability framework under which BPA will make up any shortfall in conservation achievement among BPA customers, financing the costs of doing so through wholesale rates, if the customer-based programs do not achieve the megawatt targets identified (do not add up to BPA's conservation target).

2.4.3.2 BPA Generation Acquisition

BPA acquires generating resources according to the resource priorities of the Northwest Power Act and the direction of the Council's Power Plan. In evaluating resources, BPA includes adjustments for environmental costs. The current Power Plan provides for BPA to acquire, in addition to 660 aMW of conservation, the 455 aMW of generating resources included in BPA's 1992 Resource Program by 2003. Because of changes in the wholesale power market, BPA is considering terminating those resources that are no longer cost-effective. In addition, BPA has acquired 1,150 aMW of resource options in case of contingencies, such as unexpected load growth or loss of generating capability, that increase the amount of generation needed. BPA also supports research and development efforts to expand the supply of energy resources. Other strategies for resource acquisition could include short-term (spot market) purchases in place of long-term firm resource acquisitions (see "Off-System Purchases" below), joint ventures with other entities, lesser amounts of contingency resources, or different research and development strategies.

2.4.3.3 Off-System Purchases

Interconnections among power systems facilitate power transactions between systems where resources on one system are available to supply demands on another system. BPA frequently uses power purchases from other interconnected systems to meet short-term needs. In recent years BPA has used these "spot market" or "economy energy" transactions to meet loads during severe cold weather, to displace more expensive resources economically, and to permit storage of water for fish flow augmentation. The availability of power for both short- and long-term purchase is likely to increase with open transmission access, as developers construct resources for sale to the market. The increase in efficiency and supply of resources would reduce prices on the spot market. A competitive market might also create surpluses for utilities if, for example, industries now served with utility power develop their own generation to serve their loads or cogeneration to produce power to

market. This potential might allow BPA to plan to meet a portion of its firm loads with unspecified market purchases rather than with long-term firm resource acquisitions.

2.4.3.4 Least-Cost Planning

The Council's Power Plan identifies least-cost resources for BPA to meet the PNW demand for electric energy, based on information about the fixed and variable costs of different resource types. The “stack” of resources shown in the plan reflects current information and assumptions about present and future costs, including environmental costs of resources. One important assumption that influences the priority of resources in the plan is the discount rate, which indicates the emphasis given to future costs. A higher discount rate favors resources with lower capital costs and higher fuel costs. A high discount rate results in more weight to the costs in the short term and less to the projected costs in later years. With current resource options, a higher discount rate would make resources with lower early-year costs (e.g., CTs) more attractive and resources with high up-front costs (e.g., conservation or renewables) less attractive. The Council's Power Plan uses a discount rate of 3 percent; individual utilities and resource developers generally apply higher rates.

State public utility commissions and facility siting authorities also require the utilities they regulate to use least-cost planning in their energy resource development plans. Least-cost plans must address environmental costs. As a result, energy resources developed by regulated utilities, and resources above the size threshold for permit approval by siting authorities (e.g., 250 megawatts (MW) in the State of Washington) are subject to some type of state-level least-cost planning requirements. The only resources that do not fall under these least-cost planning mandates are publicly owned utilities developing resources below the size subject to siting approval.

2.4.4 Transmission

2.4.4.1 Transmission System Development

BPA currently plans and develops its transmission facilities on the basis of planned customer and regional loads and a commitment to provide an efficient, “one-utility” regional transmission system. BPA's transmission system is planned to meet Western Systems Coordinating Council (WSCC) and BPA reliability criteria for service quality. BPA could plan transmission system development with different goals, such as tailoring service to the special needs of individual loads. BPA would not propose to change the portion of the reliability criteria that sets standards for equipment safety and performance. Figure 2.4-3 shows the major influences on transmission system development.

2.4.4.2 Transmission Access

BPA's transmission system was constructed primarily to deliver power from the FCRPS to the customers that purchase power from BPA. As provided by the Federal Columbia River Transmission System Act in 1974, BPA offers non-Federal utilities access to Federal transmission capacity not required for Federal use. On occasion, BPA has added capacity specifically to wheel non-Federal power, as it did for the Colstrip coal plants in Montana.

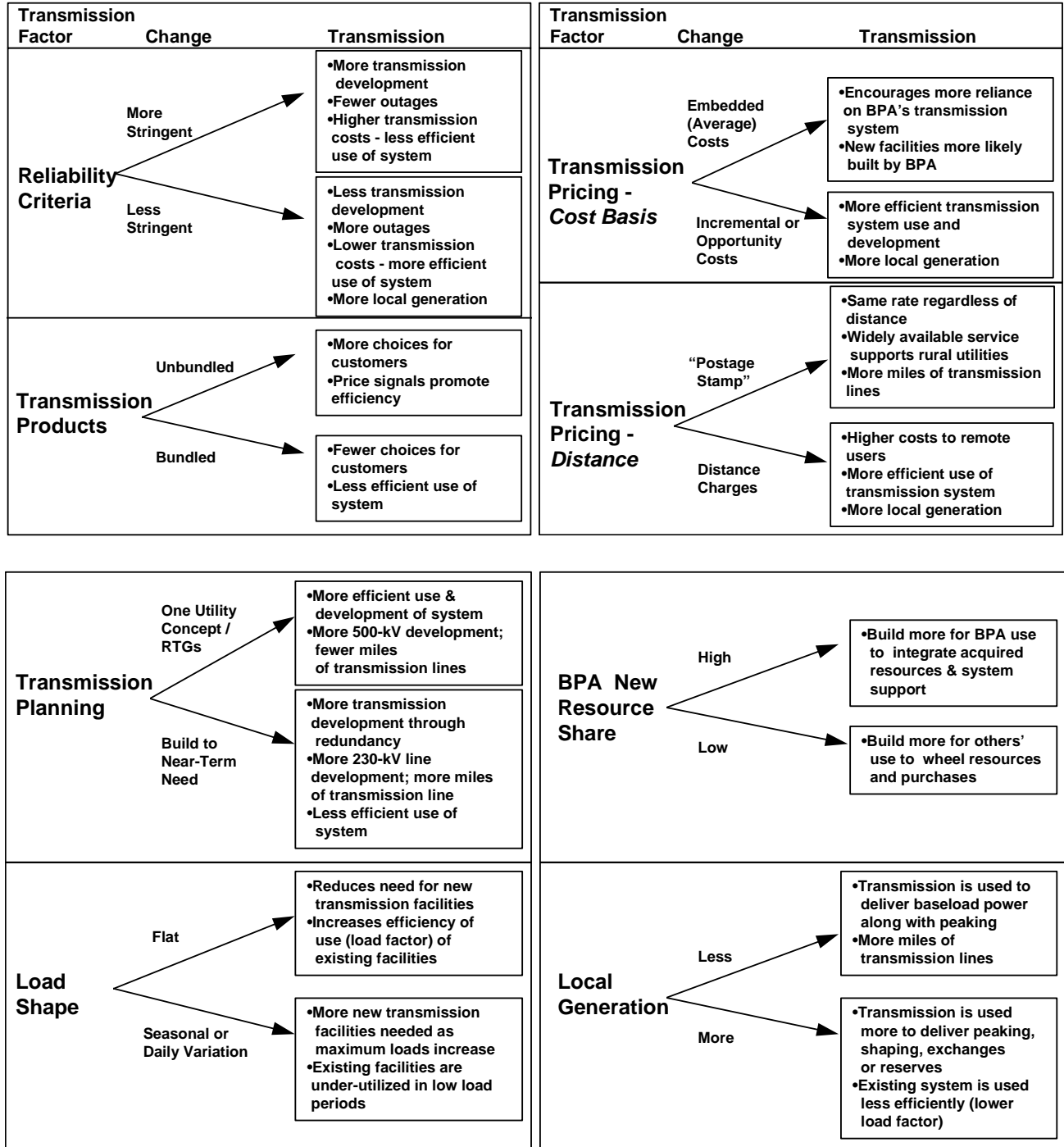
EPA-92 establishes new directives for all utilities that operate transmission systems, including BPA. Under EPA-92, FERC can order “transmitting utilities” to provide access to surplus transmission capacity for utilities and any other parties that generate electric energy for wholesale marketing and that request such access.

FERC may also order a utility that controls transmission facilities to construct new facilities to serve the needs of all applicants at prices that recover the cost of providing the access.

Although BPA has generally provided requested transmission services in the past, EPA-92 likely narrows future choices regarding the degree of access it provides to its transmission system. However, options may exist concerning priority, pricing, and conditions of access.

FIGURE 2.4-3

Understanding Transmission Development Major Influences



2.4.4.3 Assignability of Rights Under BPA Wheeling Contracts

BPA does not currently permit utilities with wheeling contracts to transfer their wheeling rights to other parties without BPA's explicit case-by-case approval. A new party desiring BPA wheeling must negotiate an independent wheeling agreement with BPA. If BPA permitted assignment of wheeling rights or the use of contract wheeling rights by third parties, it could open up the market for, and increase competition in, wheeling services in the region by allowing new parties to negotiate with any party holding wheeling rights over the desired transmission path, and not just with BPA. BPA would receive payment under the existing wheeling agreements, and the party holding the wheeling contract with BPA might reduce its costs and therefore its financial risk under the contract. The flexibility provided to customers by allowing assignment might expedite BPA's negotiations of wheeling agreements by reducing cost risks for wheeling parties. Assignability could pose challenges for scheduling and billing.

2.4.4.4 Retail or DSI Wheeling

EPA-92 does not grant FERC authority to order wheeling to retail ("ultimate consumer") loads, but may allow retail wheeling where consistent with state laws regarding electric utility retail marketing areas (e.g., state utility franchises). As a matter of policy, and except for DSI Industrial Replacement Energy (IRE) service, BPA has not traditionally provided long-term wheeling over its transmission system to serve DSIs and does not provide any wheeling to retail loads of other utilities. However, this policy could be revised to allow such wheeling, as consistent with BPA's statutory framework and other Federal and state laws.

2.4.4.5 Customer Service Policy and Subtransmission

BPA's Customer Service Policy (CSP) sets standards under which BPA will plan and construct facilities to deliver power to full and partial requirements customers. For small customers (average loads up to 25 MW), BPA will provide up to 50 megavolt-amperes (MVA) of distribution transformation capacity. The present policy is oriented toward BPA developing facilities, including fringe and some delivery facilities, that are consistent with the best one-utility plan of service. To recover the costs involved in providing these facilities, BPA could revise the CSP to limit BPA's costs, establish charges that recover BPA's costs from the customers that benefit from the facilities, or encourage customers to develop or maintain their own facilities.

2.4.4.6 Operations, Maintenance, and Replacement

Transmission system maintenance (including replacement of facilities) is a critical function in the reliable delivery of power and services. BPA's transmission system represents a \$3.7 billion investment (in 1993 dollars), with a significantly higher replacement value. Currently, *maintenance* needs and costs are driven by time-based schedules; *replacement* needs and costs are driven by schedules based on the equipment's expected useful life. These schedules are standard utility practice, and increase the probability that a given facility will receive preventive rather than reactive maintenance (remedial efforts following equipment failure).

BPA could move from time-based maintenance scheduling to reliability-centered maintenance—that is, maintaining the equipment when it gives signs that maintenance is needed. Reliability-centered maintenance could reduce costs. However, regardless of the maintenance policy adopted, a predictable level of dollars is needed to sustain system reliability. If budgets are insufficient to meet the need, maintenance and replacements could be further prioritized, and some maintenance and replacement would not occur when needed. Consequently, some equipment might fail, resulting in lower system reliability because of the unplanned nature of the outages. This would also mean higher maintenance and replacement costs per unit because of both the unplanned nature of the work and the damage sustained to the equipment as a result of the failure. At the extreme, operating below industry standards would increase the risks of losses or hazards to people, property, and the environment.

2.4.5 Fish and Wildlife Administration

BPA's fish and wildlife function is currently the object of a great deal of concern both within BPA and in the region. BPA has a statutory responsibility under the Northwest Power Act to mitigate for fish and wildlife losses caused by Federal hydro projects on the Columbia River and its tributaries. In addition, BPA and Federal hydro operating agencies have responsibilities to take actions to prevent jeopardy to species listed as threatened or endangered under the ESA. Since the passage of the Northwest Power Act, BPA has invested over \$1 billion in program measures, reimbursements to other Federal agencies for their mitigation activities, power purchases, and foregone revenues; amounts have increased dramatically in the last few years as regional efforts to rebuild salmon stocks have intensified. These costs have contributed to increases in BPA's rates and to uncertainty about how these costs affect BPA's future rates—a concern to customers—while the continued lack of improvement in fish populations concerns everyone. The Clinton administration has agreed to assist BPA in meeting the costs of fish and wildlife enhancement by allowing credit to BPA for a portion of fish and wildlife cost that is attributed to non-power uses of the Federal hydrosystem, and additional near-term credits to help BPA pay the costs of power purchases which are necessary to compensate for hydro operations to aid fish migration. These cost-sharing measures will help to lessen the impact of fish and wildlife enhancement activities on BPA's financial condition.

BPA has identified three broad dimensions of fish and wildlife administration that help define its potential directions and illustrate potential impacts under its Business Plan:

- 1) the relationship between BPA's responsibility to implement its mandated fish and wildlife responsibilities, and its accountability for results;
- 2) BPA's financial position—its ability to predict and stabilize its fish and wildlife costs; and
- 3) the administrative mechanisms for distributing the fish and wildlife dollars.

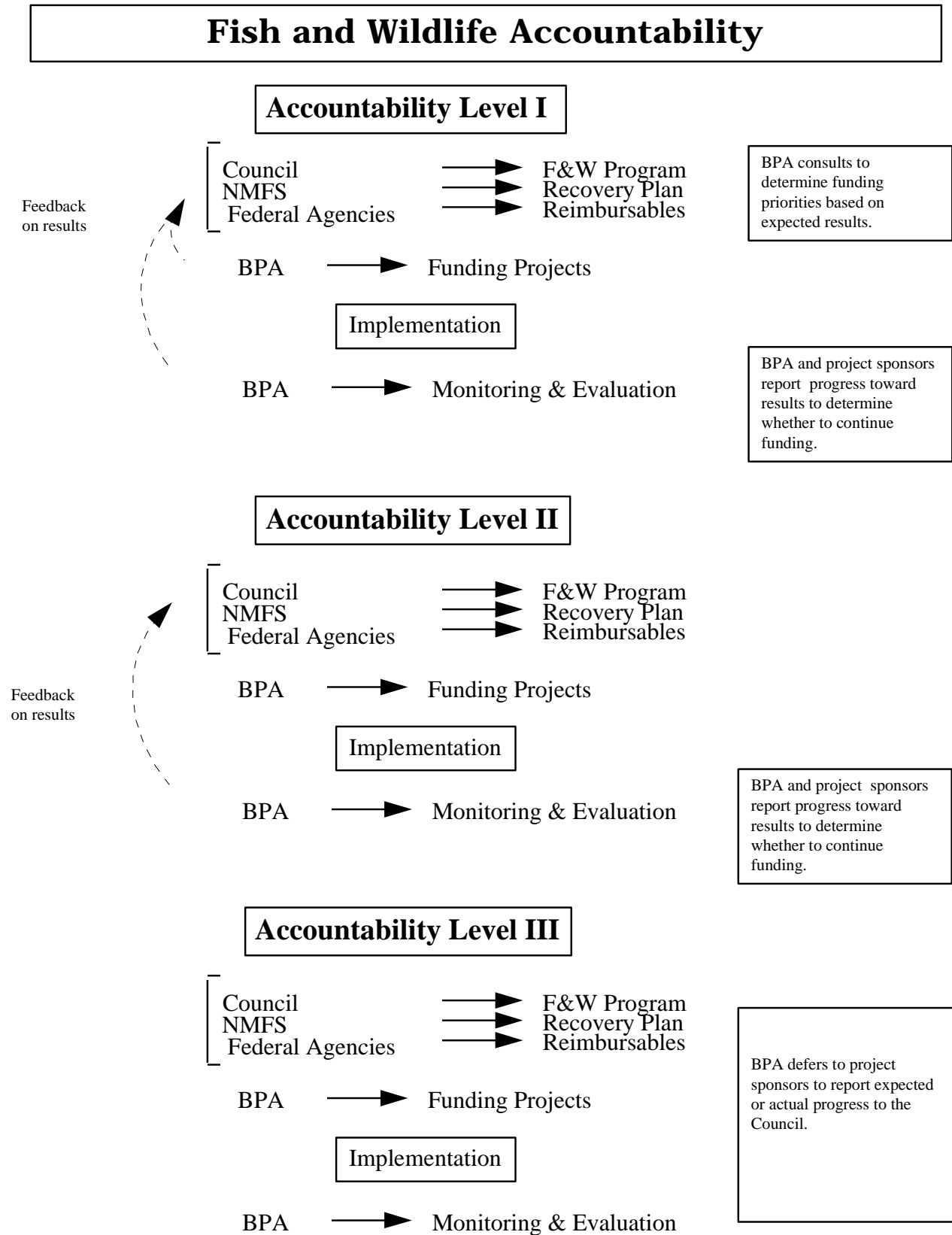
In all cases, BPA assumes that it must implement the Council's F&W Program and the ESA Recovery Plan, satisfy trust obligations to Indian Tribes, and fulfill other mandates. One option might require new legislation to implement. At issue is not which measures to fund, but rather, the extent of BPA's role in fulfilling its mandated fish and wildlife responsibilities in balance with its power marketing role, and how it might do so in a business-like manner.

2.4.5.1 BPA's Responsibility and Accountability

BPA currently attempts to meet its statutory fish and wildlife obligations by implementing the Council's F&W Program and by taking actions to comply with ESA. BPA is both *responsible* to implement specific, planned actions and *accountable* for ensuring that they yield results (i.e., progress toward Council F&W Program and ESA goals). A major concern for BPA is that its responsibility and accountability are not well linked. Although BPA has been held accountable for funding the program and producing results, other regional and state management agencies and Tribes largely determine what the action measures should be. When BPA has on occasion attempted to influence decisions about which projects to fund, in order to assert its responsibility to spend ratepayer funds effectively, the region's fish and wildlife agencies and Tribes have questioned BPA's right to do so (see Appendix E, Response to Comments on the Draft Business Plan EIS). For BPA, tension is created between its equally important responsibilities to implement fish and wildlife measures and those to assure BPA's competitiveness. There certainly is disagreement within the region regarding BPA's role in balancing these obligations.

Recent court decisions indicate that the Council is responsible for determining the actions to take that will best restore endangered and threatened fish stocks; however, they also indicate that the Council must give deference to fish and wildlife agencies and Tribes in making those choices. BPA recognizes that the Council's F&W Program, tribal treaty rights, and the ESA will continue to drive BPA's fish and wildlife program. However, BPA can choose to assert greater or lesser levels of responsibility and accountability for how these funds are spent.

FIGURE 2.4-4



At one end of a spectrum, BPA could defer to other entities to take responsibility or accountability for results. (See figure 2.4-4.) This approach holds that the efforts of the Council, agencies, and Tribes are sufficient to ensure the success of regional fish and wildlife mitigation efforts and that BPA should therefore defer to other entities to define results and funding priorities and to monitor progress towards results. BPA would serve essentially as a funding source, defining only *how much* money it was able to spend, but would have little or no say in *how* funds were spent or in monitoring the results they achieved.

At the other end of a spectrum that does not require changing responsibilities as defined in current legislation and case law, BPA would take an active or even central role in working with regional entities to determine funding priorities based on credible definitions of the biological results that projects are expected to achieve. This approach implies that BPA would take a significant role in measuring long-term progress toward fulfilling program goals.

2.4.5.2 Stability and Predictability of Fish and Wildlife Costs

There is considerable concern about BPA's ability to maintain adequate long-term funding for programs, including fish and wildlife activities. BPA's total costs, including the substantial costs of its fish and wildlife program, drive the increases of its rates. BPA funds fish and wildlife activities under three categories:

1. Direct program;
2. Reimbursables; and
3. Power purchases and foregone revenues for fish enhancement.

Currently, BPA's Fiscal Year (FY) 1995 fish and wildlife costs are estimated at between \$281 and \$398 million; they are about 15 percent of BPA's total costs and do not reflect additional costs associated with the 1995 NMFS or USFWS Biological Opinions.

The expenses associated with the three categories are:

- Direct expenses (not including capital debt service) of Council F&W Program measures: \$61.2 million.
- Reimbursables to the U.S. Treasury after-the-fact for fish and wildlife actions by other Federal agencies: \$105 million. Reimbursables include fish and wildlife expenses of other Federal agencies (COE, BOR, USFWS) that are to be repaid to the Treasury from power revenues. These expenses include interest and amortization on BPA's capital budget investments, operations and maintenance (O&M) assigned to power, and a portion of the Council's annual expenses.
- Foregone revenues and increased power purchases as a result of operating Federal hydro projects to enhance migration conditions for fish, spill at Federal dams, and other related operations. These actions, based on the 1994 NMFS Biological Opinion, range from \$115 to \$191 million. While not all power purchases and foregone revenues are attributable to fish (drought and irrigation withdrawals, among other actions, also influence power purchases), the costs reported are estimated to be those directly attributable to BPA's fish obligation.

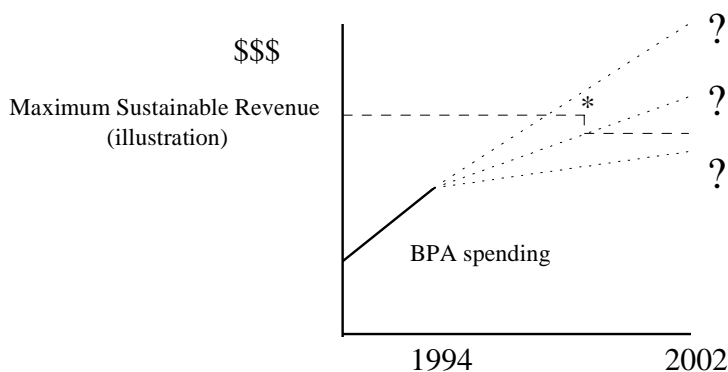
BPA recognizes that implementing the Council's F&W Program is an important component of its fish and wildlife costs. In FY 1995, BPA's direct program budget, including expense and capital, is \$83 million. These costs include about \$5.4 million to administer the program (primarily for staff)—about 7 percent of the total.

BPA is concerned that the costs of all its programs, including those for fish and wildlife, do not exceed maximum sustainable revenues. If BPA cannot sell enough power at a price to cover its costs, the agency may not be able to meet all of its responsibilities, including those to provide an efficient, economical, and reliable power supply and to restore and enhance the region's fish and wildlife (figure 2.4-5). (Cost control measures for other programs are discussed in the description of the alternatives and other modules, sections 2.2 and 2.3, and in the discussion of response strategies, section 2.5.)

FIGURE 2.4-5

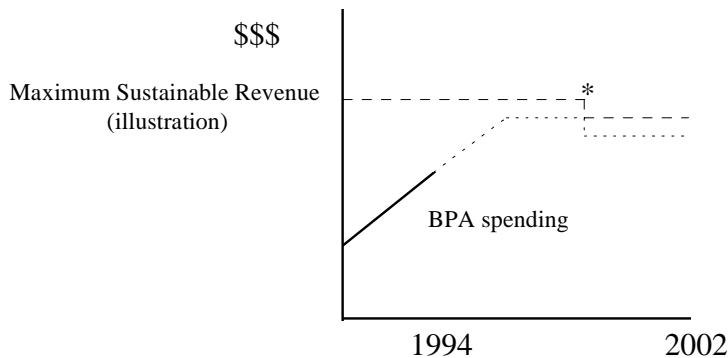
BPA Financial Position and Cost Certainty for Fish and Wildlife

Illustrative Example:



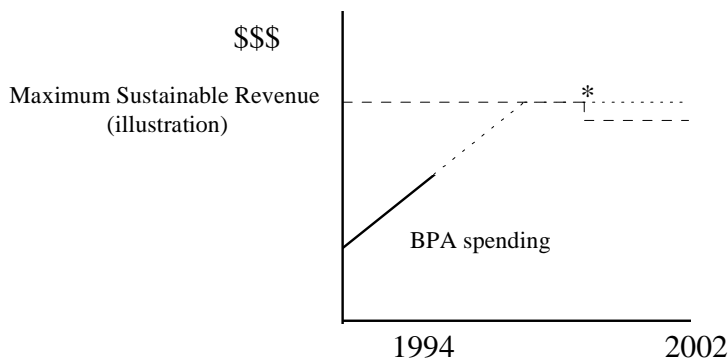
Uncertainty

- Current Situation - Concern for both BPA customers and F&W implementors: implementors are not sure of continuity in funding; customers are wary of unexpected future costs and effect on BPA rates.
- Could be disrupted by limits on BPA expenditures due to maximum sustainable revenues.



Predictability

- Not necessarily constant costs, but known rates of escalation.
- Could be indexed to maximum sustainable revenues.



Stability

- Ceiling on BPA F&W costs, either negotiated or by default due to costs reaching BPA's current maximum sustainable revenue level.
- Could be disrupted by fluctuating maximum sustainable revenues over time as determined by the market.

* The drop in the maximum sustainable revenue line illustrates the effect of a hypothetical drop in the market price for power.

As a responsible agency, BPA must work to keep its costs down. In addition, BPA is concerned about its customers' *perceptions* of BPA's costs. In numerous forums customers have said that if BPA's costs lead to unpredictable rates, they will find other power suppliers. Some customers are also concerned about the substantial sums being spent on activities that, in their view, do not directly support power production. A few customers, such as Clark County Public Utility District, have already found other suppliers for a variety of reasons, including a desire to diversify their sources of power, as well as concerns over BPA's rates. Major losses of BPA firm loads may reduce BPA's revenues so that it is unable to pay all of its costs.

With respect to costs, BPA wants to ensure that the way it administers its fish and wildlife program does the following:

- helps keep fish and wildlife program costs from contributing to total costs that exceed maximum sustainable revenues;
- helps stabilize fish and wildlife costs; and
- helps increase the predictability of fish and wildlife costs. (See figure 2.4-5.)

Possible funding mechanisms include the current open-ended process, negotiated multi-year base-level funding, and gain-sharing of revenues that exceed rate case projections. BPA recognizes, however, that other agencies and the courts have substantial decision-making authority over BPA's fish and wildlife costs; BPA is not the sole guardian of its destiny in this regard.

2.4.5.3 Administrative Mechanisms

Alternative administrative mechanisms may contribute to different degrees of stability and predictability of BPA's fish and wildlife costs and, in some cases, to different levels of responsibility and accountability. The same goals that are now pursued with open-ended BPA funding might be achieved through lump-sum transfers to fish and wildlife management agencies or trusts, or with a shared responsibility for identifying funding priorities and monitoring results. The difference lies in which entity is directly involved in managing the portions of the program that BPA has administered in the past. The choices range from continuing BPA's past role, through establishing shared management with other participating agencies, to removing BPA from management and leaving the administrative function entirely to other agencies.

2.4.6 Comparison of Issues Across Alternatives

The issues discussed in section 2.4 are dealt with in a variety of ways and combined into alternatives. Table 2.4-1, following, shows how each alternative treats each issue. The table does not include policy modules.

Table 2.4-1: Treatment of Business Plan Issues Among Alternatives

	Status Quo [No Action]	BPA Influence: BPA Exercises Market Influence to Support Regional Goals	Market-Driven BPA (Proposed Action)	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
Issue						

PRODUCTS AND SERVICES						
Bundling or Unbundling of Power Products and Services	Current bundles; requirements, resource integration, and system services for all firm requirements customers.	Unbundled; rebundled, including system services, for customers that comply with Council Power Plan and F&W Program.	Unbundled and rebundled; aim for highest value; system services available separately to all customers and IPPs/brokers/marketers.	Unbundled and rebundled; aim for highest value; system services available separately to all customers and IPPs/brokers/marketers.	Bundled for long-term allocation; system services sold on long-term basis.	Unbundled for flexibility in marketing.
Surplus Power Products and Services	As available; near-term or recallable basis; especially spring and summer capacity.	As available; near-term or recallable basis. Customers held to existing contracts, not allowed to add firm resources to offset BPA power purchases.	Expanded choice of products; new parties, e.g., Mexico or IPPs/brokers/marketers outside the PNW; flexible surplus contracts to replace some requirements service; medium to long-term recallable extraregional contracts.	Medium to long-term extraregional contracts.	Planning to minimize surplus; sell as available; spring nonfirm and summer capacity.	No distinction from firm requirements products.
Scope of BPA Sales	Sales limited to PNW utilities, Federal agencies, DSIs, and extraregional utilities.	Sales to PNW utilities, Federal agencies, DSIs, plus customer pools and IPPs/brokers/marketers.	Sales to PNW utilities, Federal agencies, DSIs, plus customer pools and IPPs/ brokers/marketers.	Broaden scope to expand sales, including customer pools, IPPs/brokers/marketers, retail loads, and Federal agencies outside the PNW.	Sales limited to PNW utilities, Federal agencies, DSIs, and extraregional utilities.	Sales to PNW utilities, Federal agencies, DSIs, plus customer pools and IPPs/brokers/marketers.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
PRODUCTS AND SERVICES (CONTINUED)						
Determination of BPA Firm Loads Customer net requirements Full and partial requirements Resale of Federal power (Tier 1) Delivery of power under exchange (RPSA) 9(c) deduction of exports from firm requirements DSI contract demand (firm load) Allocation in insufficiency	BPA firm loads defined by actual customer loads, deducting firm resources and certain exports, or contracted amounts of firm power service on 7 years' notice; resale of Federal power prohibited; DSI load firm for operations but not for planning; no in-lieu power deliveries under residential exchange; allocation by formula.	BPA full requirements loads defined by actual customer loads, deducting firm resources; partial requirements defined by take-or-pay contractual commitment; when BPA is in surplus, customers can't leave until BPA offers new contracts with shorter notice provisions; resale of Tier 1 Federal power permitted to enable conservation transfers; DSI load on BPA served as firm; no in-lieu power delivered under residential exchange; allocation by formula.	BPA full requirements loads defined by actual customer loads, deducting firm resources; partial requirements defined by take-or-pay contractual commitment; resale of Tier 1 Federal power permitted among partial requirements customers; 9 months' notice for service; DSI load on BPA served as firm; in-lieu power delivered under residential exchange if available at competitive price that is less than participating utilities' average system cost (ASC); allocation by formula.	BPA loads, including DSI loads, defined by contracts for service; resale of Federal power permitted; power delivered under residential exchange if available at competitive price that is less than participating utilities ASC; flexible marketing avoids need for allocation.	BPA firm loads defined by long-term contractual take-or-pay allocation to each customer; resale of Federal power permitted to facilitate supply adjustments among customers; in-lieu no power delivered under residential exchange.	BPA firm loads defined by short-term sales commitments; in-lieu power delivered under residential exchange if available at competitive price that is less than participating utilities ASC; flexible marketing avoids need for allocation.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
PRODUCTS AND SERVICES (CONTINUED)						
Marketing to Support Power System Stability and Quality DSI reserves Reactive power conditions Harmonic control	DSI loads are interruptible to provide energy reserves and system stability in exchange for rate discount; other loads served at quality of service based on system reliability standards. System stability needs reflected in billing adjustments.	Customers in compliance with regional plans have choice in quality and cost of service. BPA seeks reserves at lowest cost by bidding for reserve capability from utilities, DSI's, retail loads, and IPPs; address costs of stability in customer service policy.	All customers have choice in quality and cost of service. BPA may seek reserves at lowest cost by bidding for reserve capability from utilities, DSI's, retail loads and IPPs; address costs of stability by setting charges for stability measures in customer service policy.	Quality of service is reflected in price; sensitive and eccentric loads bear costs of facilities to provide required quality of service or mitigate adverse effects on the power system; address specific load characteristics in specific transactions. BPA seeks reserves at lowest cost by bidding for reserve capability from utilities, DSI's, retail loads, and IPPs.	Uniform quality of service to all customers; DSI interruptions only to the extent that firm power is allocated to DSI loads. Rely on existing system reserves; stability costs included in firm power pricing.	Quality of service negotiated in specific sales; flexible as short-term transactions expire and are replaced; pricing based on market value. Solicit reserves as needed on short-term basis.
Unbundling of Transmission and Wheeling Services	Current service bundles; no new separate services.	Unbundled transmission services, with priority access to the integration of resources that have been coordinated with the Council Power Plan and F&W Program.	New services for more flexibility to respond to customer needs, more market signals; integration of multiple points of integration and delivery; possible charges with distance and congestion components; alternative levels of interruptibility; possible separate services for reactive support, harmonics control, delivery facilities.	Unbundle to maximize revenue from specific investments; full and partial requirements customers pay for transmission separately (not in power rates).	BPA markets existing transmission capability under long-term contracts; for administrative simplicity, services sold in a few basic bundles.	Unbundled transmission services with reservations or conditions to preserve BPA short-term marketing flexibility.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
PRODUCTS AND SERVICES (CONTINUED)						
Other BPA Services Financial Mgt. Environmental cleanups Communications Other	No new services. Services provided as part of bundled service.	BPA offers services to the extent they are self-supporting. BPA sets standards for providing services.	BPA offers services to the extent they are at least self-supporting.	BPA offers services to the extent they are self-supporting and produce positive revenue streams; give priority to highest revenue enterprises.	No new services.	BPA offers services to the extent they are self-supporting.
RATES						
Power Pricing and Rate Attributes	<u>Tiers:</u> No tiering; primarily embedded cost for firm power; flexible market-based rates within embedded cost recovery for nonfirm energy. <u>Rate Attributes:</u> Efficiency: seasonality, heavy load hour (HLH) capacity Load Retention: discounts (low density, irrigation, DSI reserves), price indexing (variable industrial - VI)	<u>Tiers:</u> 1: Efficient load (estimated 75% of historical load) at embedded cost, including BPA conservation programs. 2: Regional marginal resource cost. <u>Rate Attributes:</u> Incentives to better match loads to system flows; conservation surcharge, streamflow rates.	Evolution toward two-tiered rates for firm requirements; market-based for other products and services: <u>Tiers:</u> 1: 90% of historical load; reconcile costs. 2: Incremental (new resource) cost, consistent with market. <u>Rate Attributes:</u> Efficiency: tiering, unbundled rates, no discounts; flexibility. Load retention: firm requirements service stabilized at current levels. Seasonality applied to preserve load during high streamflow periods.	<u>Tiers:</u> No tiering; market price/ value. <u>Rate Attributes:</u> Flexible rates to respond to market opportunities; discounts only as negotiated for increased revenue.	<u>Tiers:</u> No tiering; average embedded cost; cost recovery. <u>Rate Attributes:</u> Long-term allocation; administrative simplicity; no discounts or efficiency incentives.	<u>Tiers:</u> Two-tiered rates to promote efficiency in resource development. <u>Rate Attributes:</u> Flexibility to respond to market opportunities; unbundled rates, risk-sharing; no discounts.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
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RATES (CONTINUED)

Transmission and Wheeling Pricing	Continue current wheeling rate schedules; mostly embedded cost, some incremental cost pricing; BPA power transmission rolled into power rates.	Discount for integrating Regional Act priority resources (e.g., conservation transfers, renewables); BPA power transmission rolled into power rates.	Largely embedded cost; incremental and opportunity costs provide flexibility and price signals; transmission costs of delivering Federal power to customers identified in power bills.	Much greater use of incremental, opportunity costs in wheeling rates; transmission costs for power separately priced based on customer location.	Transmission prices reflect embedded costs.	Opportunity cost pricing to compensate for lost marketing; BPA power transmission rolled into power rates.
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ENERGY RESOURCES

BPA Conservation	BPA-funded, all sectors, centrally designed programs for 660 aMW of energy conservation by 2003.	Tiered rate price incentive for conservation; utility-designed and -funded conservation programs; BPA encourages investment by using transfers and tiered rate pricing; as new conservation savings are identified, BPA funds those not picked up by tiers or transfers.	Utility-designed and -funded programs; BPA DSM products and services; market transformation with regional IOUs; BPA agrees to an accountability framework for utility conservation programs; BPA guarantees total savings will meet total Council target.	Sales at market value provide price signal for utility conservation; conservation investments must produce more revenue than their cost, using Regional Act's standard of cost - effectiveness; offers proven marketable conservation services; R&D limited to projects with potential for near-term return on BPA investment.	BPA buys out or terminates planned conservation projects; customers may resume, depending on alternative cost; no BPA R&D program.	New BPA programs only for measures that pay off to BPA within term of sales; market price incentive for utility conservation; BPA markets conservation services; R&D to market proven technology.
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Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
ENERGY RESOURCES (continued):						
BPA Generation Acquisition	BPA purchases resource <u>output</u> via competitive acquisitions or solicitation; 400 aMW of new generation and 250 aMW of preconstruction options by 2003; 800 aMW of option resources for contingency.	Use required review of customer least-cost plans to develop BPA/Council least-cost resources; BPA holds option resources for contingency program in proportion to firm requirements load.	BPA acquires cost-effective resource <u>output</u> alone and through joint ventures; strategic additions enhance system's ability to supply high-value products; load interruptibility; R&D (Resource Supply Expansion Program (RSEP)) to prove new generation cost-effective; short-term purchases and fuels options (gas ventures) for contingencies. BPA analyzes all planned and existing generation projects and terminates those that are more expensive than purchases or new resources.	Lowest cost resources at high discount; BPA acquires only proven cost-effective commercial resources; BPA makes strategic investments from retained earnings and acquires only resources that support a competitive advantage in unbundled markets; no resource options; relies on market to meet resource needs. BPA analyzes all planned and existing generation projects and terminates those that are more expensive than purchases or new resources.	No BPA resource acquisitions beyond acquisitions already under construction; BPA terminates planned unbuilt generation projects; no contingency resources or options.	Spot market purchases up to 5 years; long-term acquisitions only if justified based on economic advantage or flexibility; include options in portfolio with "off ramps" for flexibility.
Off-System Purchases	Short-term purchases to respond to shortages within operating year. (NFP No-Action)	Same as Status Quo alternative.	Strategic reliance on short-term economy purchases to meet part of BPA firm load obligations.	Purchases where there is an opportunity for gain, whether to supply firm loads or to resell to other purchasers.	BPA would make no off-system purchases.	BPA would make off-system purchases to support BPA brokering.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
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ENERGY RESOURCES (continued):

Least-Cost Power Resources Planning	BPA/Council least-cost plan, including environmental costs, for BPA acquisitions; PUC for regulated utilities; siting authorities' requirements for developers.	Council-approved BPA and customer plans, including environmental costs.	BPA/Council least-cost planning, including environmental costs; Council Power Plan for BPA acquisitions; customer choice as regulated.	BPA adopts a short-term, least-cost planning focus, without environmental costs; based on short-term financial return standards (not Council).	N/A for BPA; customer choice as regulated.	Let market operate to develop least-cost resources, including environmental costs; few BPA long-term acquisitions.
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TRANSMISSION

Transmission System Development [Note: all alternatives subject to EPA-92]	BPA uses long-term, one-utility plan based on forecasted load of customers and region.	BPA uses long-term, one-utility plan based on forecasted loads of customers that comply with the Council Power Plan and F&W Program.	BPA plans based on forecasted Federal system load and requested service.	BPA plans with emphasis on transmission for strategic market advantage and increased sales of high-margin products; builds on request at cost plus return; makes strategic investments in extraregional transmission.	Minimal additions.	System additions planned to secure marketing benefits for BPA.
Transmission Access [Note: all alternatives subject to EPA-92]	First-come, first-served.	Priority access to resources consistent with regional plans.	Would treat wheeling loads comparably to Federal power loads; no access for Columbia Basin Protected Areas resources.	Access to requests that provide highest net revenue to BPA.	First-come, first-served.	Priority to requests that preserve BPA flexibility.
Assignability of Rights under BPA Wheeling Contracts	No, unless BPA agrees on case-by-case basis.	Assignable among complying customers.	Assignment of rights or third-party wheeling.	No, unless assignment provides additional revenue to BPA.	Yes, under long-term wheeling agreements.	Yes, to enhance marketability.

Table 2.4-1 (continued): Treatment of Business Plan Issues Among Alternatives

Issue	Status Quo	BPA Influence	Market-Driven BPA	Maximize BPA's Financial Returns	Minimal BPA Marketing	Short-Term Marketing
TRANSMISSION (continued)						
Retail or DSI Wheeling	BPA does not provide long-term wheeling to DSI loads or retail loads.	BPA provides long-term wheeling to DSIs that comply with the Council Power Plan in their resource acquisitions, but does not provide wheeling to retail loads.	BPA provides long-term wheeling to DSI loads, but not to retail loads.	BPA provides long-term wheeling to serve DSI loads; BPA serves other utilities' major retail loads where legally feasible.	BPA provides long-term wheeling to serve DSI loads, but not to retail loads.	BPA provides short-term wheeling to all requesters that can arrange scheduling.
Customer Service Policy and Subtransmission (Fringe and delivery service)	BPA plans and constructs facilities based on the best one-utility plan of service; no separate charges for subtransmission services; BPA supplies most fringe facilities, some delivery.	BPA provides “one-utility” type facilities to customers complying with the Council Power Plan; no separate charge for complying customers; BPA supplies fringe and delivery facilities to complying customers.	BPA provides “one-utility” type facilities to requesting customers; customers may choose lower quality service to reduce cost; “grand-father” present facilities; charge for customers that do not supply their own delivery; BPA builds some new fringe facilities, incremental charge for new delivery facilities; sell existing facilities where economic and strategic.	BPA provides only those facilities that produce margins greater than other uses of available capital; BPA builds facilities at cost plus return; charges actual cost, sells, or leases facilities operating at a loss.	No additional facilities; no BPA service below local transmission voltage; no new subtransmission facilities; BPA may sell or lease fringe and delivery facilities.	New facilities added where they enhance BPA sales; BPA builds subtransmission facilities at cost plus return; charges actual cost, sells, or leases facilities operating at a loss.
Operations, Maintenance, and Replacement	Maintenance in response to time in use and customer requests.	Priority to facilities serving loads of complying customers.	Priority to facilities not meeting outage duration and frequency criteria.	Priority to facilities producing greatest net revenues.	Maintenance in response to time in use and customer requests.	Priority to facilities producing greatest net revenues.

2.5 Response Strategies for Revenue Shortfall

Any combination of alternative and modules should allow BPA to balance its costs and revenues. However, the components and assumptions of some alternatives, even under a least-power-cost continuation of current river operations, would make it difficult for the agency to generate enough revenue to pay all of its costs. BPA's ability to generate revenue reflects the concept of maximum sustainable revenues, which recognizes that the market price for power sets a limit on BPA's potential firm power revenues. (See section 2.6.1.) Balancing revenues and costs becomes even more difficult if the market price of power should fall, or if river operations were changed to increase springtime flows and decrease water available to produce power during the rest of the year.

BPA could choose to address a revenue shortfall through one or more response strategies. Below are brief descriptions of response strategies BPA could pursue if its costs exceeded its maximum sustainable revenues. Response strategies fall into the following three general categories, based on how they affect BPA's financial condition:

- Increase BPA revenues
- Reduce spending for BPA's activities
- Transfer BPA spending to other entities.

Strategies vary in their effect on BPA's ability to meet its costs, and in their feasibility. Some might mitigate a significant share of the increased spending, but would be controversial, while others might make a smaller difference in BPA spending without triggering contentious debates among BPA's customers and constituents. Some might require changes in law or executive policy. BPA's goal in selecting among available response strategies would be to achieve a cumulative change in costs, revenues, or spending responsibilities that is enough to enable BPA to meet its financial obligations, including Treasury payments, while continuing to compete in the west coast and regional electric energy markets. The response strategies discussed below are representative of the types of responses BPA could consider.

2.5.1 Strategies to Increase BPA Revenues

- **Raise firm power rates.** BPA could increase rates for firm power products and services.
Rate increases would increase BPA's revenue only up to the maximum sustainable revenue level, and are limited by the market price and availability of comparable products and services from non-BPA suppliers. [Value: Roughly \$100 million annually per mill/kWh PF rate increase if BPA keeps most current firm loads; rapidly declines as BPA loses firm load.]
- **Raise transmission rates to recover other power system costs.** Transmission rates could be increased to provide additional revenue to help pay power costs.
BPA's statutes and proposed FERC policies and regulations recognize that it may be necessary to recover stranded generation investment from transmission system users. [Value: Uncertain.]
- **Increase unbundled products and services revenues.** BPA could market greater amounts of, or increase rates for, unbundled products and services to increase revenues.
Increasing revenues by increasing unbundled products marketed depends on product costs being lower than the sale price, and on BPA's ability to increase rates for these products and services to recover those costs. BPA's ability to raise rates for these products and services is limited by the price and availability of comparable products and services from non-BPA suppliers. Also, the FERC NOPR proposes to put several unbundled products in the category of transmission ancillary services, which are limited to cost-based rates. [Value: Uncertain.]
- **Increase sales of new products and services.** The agency could sell products and services BPA has not previously marketed, including engineering or laboratory services, resource planning or environmental consulting, telecommunications, waste management, etc.

The potential revenues from such sales would be relatively small in the near term until BPA could develop markets for these products and services, but could make a significant contribution to BPA's revenues over the long term. [Value: Near-term - little initially; potentially \$100 million annually in several years; long-term - \$400 million or more.]

- **Increase seasonal storage.** BPA could secure rights to additional storage, for example from Canadian hydro projects, pumped storage projects, or possibly hydrogen gas, to enable BPA to use energy from spring flows (required to aid fish migration) to serve loads in other seasons. BPA revenues would be increased because the stored energy has higher value and can be sold at higher prices outside of the spring flow periods. Costs for securing the storage must be netted from the increased revenue.

[Value: Roughly \$1 million annually per mill/kWh increase in net value for each 100 aMW stored.]

- **Optimize hydro operations for net revenues.** Currently, hydro operations are optimized for both firm energy load carrying capability (or FELCC) and revenues. Optimizing operations for revenue only would mean that BPA would give up some FELCC to produce hydro products with higher value than firm energy service.

[Value: Roughly \$1 million annually per mill/kWh increase in value for each 100 aMW shifted from FELCC.]

- **Increase extraregional sales revenues.** Revenues could be increased through additional sales, such as capacity sales and exchanges, to current extraregional customers (predominantly California) or sales to new customers.

Opportunities currently are limited by surpluses in extraregional markets and the availability and cost of comparable products and services from other suppliers. [Value: Uncertain.]

- **Increase joint venture revenues.** BPA could engage in additional joint venture power transactions with regional generating utilities or extraregional entities, such as British Columbia Hydro and Power Authority (B.C. Hydro) or its export subsidiary, Powerex.

As with extraregional sales, opportunities may be limited by economic conditions in extraregional markets and the availability and cost of comparable products and services from other suppliers. [Value: Uncertain.]

- **Sell assets.** BPA could sell facilities (e.g., substations or transmission lines) or other assets (e.g., power sales contracts) to generate near-term cash and avoid future operation and maintenance costs. Cost savings would be offset by loss of future revenues that facilities or contracts might earn (revenues foregone) and payments to the new owners to use those facilities.

One obstacle to some sales would be requirements to assess hazardous waste problems and complete cleanup prior to sale, which could offset potential revenues from a sale, or render it a net loss. [Value: Uncertain.]

2.5.2 Strategies to Reduce Spending for BPA's Activities

- **Reduce power purchases.** This strategy would reduce spending only if BPA's obligation to deliver power were reduced, or if BPA were able to meet its obligations at lower cost by other means than power purchases.

Alternative supply options based on new generation are consistently more costly than power purchases under current market conditions, but if surplus generation were no longer available in 2002, then replacing power purchases with new generation acquisitions might reduce BPA's spending. [Value: Amount of cost reduction.]

- **Reduce BPA spending on corporate overhead.** BPA could reduce its internal spending by cutting staff, facilities, communications, or services.

BPA has made and continues to reduce its staffing levels and its spending in all areas, including corporate overhead. Much of the potential for reduction has already been achieved, so that additional potential is likely to be small in relation to BPA's total budget. [Value: Uncertain.]

- **Reduce WNP 1, 2, and 3 spending.** BPA could reduce spending on the three nuclear projects initiated by the Washington Public Power Supply System in the 1970s. Reductions on interest and amortization payments would violate bond covenants, potentially resulting in default, which could trigger accelerated payment provisions that would sharply increase BPA's payment obligations.

BPA has recently informed the Supply System that market conditions are dictating that the operating costs of WNP-2 must be reduced from current levels of about 35 mills/kWh to about 25 to 28 mills/kWh. Failure to reach or exceed this goal could result in terminating operation of WNP-2. These reductions are necessary because prices on the wholesale electric market have declined to levels below WNP-2's historical operating costs. BPA believes that at current prices, it can purchase power on the wholesale market at a cost much lower than the current operating costs of WNP-2. If power purchase prices stay at current low levels, WNP-2 is at risk of being shut down. If purchase power prices increase, WNP-2 operating costs could become economic again.

Termination costs for WNP-1 and WNP-3 might have some potential for reduction, but they are a necessary expense in order to comply with state regulatory requirements and maximize salvage value of assets. [Value: Uncertain.]

- **Reduce conservation incentive spending.** Potential for reduced spending depends on the amount of conservation incentive spending expected under a given alternative. If incentive programs such as those BPA has conducted in the past continue, then there would be significant potential for reduced spending.

Under BPA's proposed conservation reinvention, incentive programs are replaced by price signals, energy services, and market transformation activities, leaving little or no conservation incentive spending to reduce. [Value: Amount of cost reduction.]

- **Reduce generation acquisition spending.** If BPA's firm power obligations do not decline, spending for generation acquisitions has a complementary relationship to spending for power purchases: as spending for generation acquisition declines, spending for power purchases will tend to increase, or BPA may fail to meet its contractual obligations. Under those EIS alternatives that result in BPA firm power surpluses, BPA could reduce costs by reducing the amount of its resource acquisitions.

Terminating or reducing acquisition costs of existing resources or committed new resource projects would be governed by the terms of the agreements for financing and acquisition of those resources. [Value: Amount of cost reduction.]

- **Reduce pollution prevention and abatement spending.** BPA could try to reduce its spending for hazardous waste cleanup and spill prevention, by adopting lower-cost cleanup methods, postponing planned cleanup and prevention activities, or declining to undertake cleanup actions in some cases. Potential spending reductions would be limited, because most hazardous waste cleanup and prevention actions are mandated by statutes and regulations, such as the Superfund law. Delay might lead to higher costs when cleanup actions are eventually taken, as well as health hazards during the delay. [Value: Uncertain.]
- **Reduce fish and wildlife spending.** BPA could pursue reductions in spending for fish and wildlife measures BPA funds directly under the Council's F&W Program. BPA could also reduce its internal fish and wildlife costs. BPA will also reduce costs by implementing Section 4(h)(10)(C) of the Northwest Power Act. This allows BPA to receive a Treasury credit for the BPA costs that benefit non-power purposes at Federal dams.

Spending for reimbursement to other Federal agencies for their fish and wildlife measures is controlled by decisionmakers in those agencies and the appropriations process, and BPA has limited opportunities to reduce the amounts those agencies choose to spend. In addition, reductions in BPA fish and wildlife spending to aid recovery of declining salmon populations are unlikely to be accepted by affected agencies if the crisis in salmon survival continues, unless necessary actions for the recovery of salmon populations can be maintained through funding from other sources. BPA's internal costs for managing its fish and wildlife activities are a relatively small percentage of total costs, and reductions may reduce BPA's ability to assure results. [Value: Uncertain.]

- **Reduce transmission construction spending.** Spending for transmission construction could be reduced by canceling or delaying planned facilities, or by adopting lower-cost construction methods.
Either approach could increase risks of outages and could compromise local or regional reliability. [Value: Uncertain.]
- **Sell capacity ownership in new transmission facilities.** BPA could sell capacity ownership in new transmission facilities, similar to the arrangements for non-Federal participation in the Third AC line of the PNW/PSW Intertie.

Shared ownership could reduce construction costs, capital debt, and operations and maintenance costs. On the other hand, it would also reduce BPA revenues from use of the facilities and could lead to an inefficient patchwork arrangement of transmission facilities. [Value: Market value of capacity, less foregone revenues.]

- **Reduce operations and maintenance spending.** Spending for operations and maintenance is closely related to system reliability, so that reduced spending would increase the probability of local or system outages.

Outages could increase BPA's costs by providing a basis for damage claims from affected customers and consumers. In some cases, near-term savings could lead to higher costs later, due to reliance on repair and remedial actions rather than prevention. [Value: Uncertain.]

- **Shift from revenue to debt financing.** Financing BPA's activities with capital borrowing rather than rate revenues could reduce BPA's near-term spending, but increased borrowing would cause BPA's debt to reach the statutory borrowing limits in a few years.

Additional borrowing above the current limits would require Congressional approval. Borrowing would also obligate BPA to a stream of payments on principal and interest, and would increase BPA's debt ratio further, limiting flexibility to reduce costs in the future. [Value: Exchanges current costs for future payments.]

- **Increase Treasury borrowing limits.** If BPA planned to continue increasing its Treasury debt to finance projects and programs, it would be necessary to raise the statutory limits on BPA debt. Under increased borrowing limits, debt financing would permit projects to proceed without requiring BPA to generate rate revenue to finance the projects.

As noted above, borrowing would obligate BPA to payments on principal and interest, and would increase BPA's outstanding debt. BPA borrowing would add to the national debt, which would lessen the likelihood that Congress would approve of raising the borrowing limits. [Value: Exchanges current costs for future payments.]

- **Lower probability of making Treasury payments.** Reduced probability of payment would reduce BPA's revenue requirement by reducing the amount of financial reserves BPA would plan for and accumulate. Missed payments would have to be made up in later years and would continue to accrue interest. A succession of missed payments could stimulate Congressional or Executive intervention to attempt to improve BPA's performance in making payments. [Value: Exchanges current costs for future payments.]

2.5.3 Strategies to Transfer BPA Spending to Other Entities

- **Seek 4(h)(10)(C) credit for fish and wildlife costs.** BPA has reached agreement with the Administration to receive a credit for BPA-incurred fish costs that benefit non-power purposes at Federal dams. Beginning in fiscal 1995, annual credits on a permanent basis under section 4(h)(10)(C) of the Northwest Power Act will provide for BPA's direct fish expenses. These credits will amount to about \$25 to \$35 million a year. In each of fiscal 1995 and 1996, section 4(h)(10)(C) credits for BPA's power-purchase costs related to its fish program will also be available. The Administration expects this action to result in about \$30 million in each of these two years.
- **Increase cost sharing for BPA programs.** BPA could seek additional support from other entities to share the costs of its programs, for example, sharing conservation program costs with utilities and government agencies, or requesting contributions to fish and wildlife program costs from Tribes and agencies involved in managing fish and wildlife resources.

Limited budgets and widespread sentiments against increasing government spending would make it difficult to secure significant cost sharing in most instances. [Value: Uncertain.]

- **Reallocate FBS costs and debt between power and non-power uses.** BPA repays the portion of FBS costs that is allocated to power production, all specific power costs, and, currently, about 70 percent of jointly allocated costs. Costs that BPA does not pay must be paid by other users or the Federal Government. If the jointly allocated costs percentage were reduced, BPA's share of the costs would be reduced, along with its share of the debt owing from construction of FBS projects.

There is no certainty that a reevaluation of the cost allocation would reduce the percentage allocated to power, however, so BPA's costs might instead be increased. [Value: Uncertain.]

- **Secure appropriations for BPA's costs.** BPA and affected customers or constituents could seek Federal appropriations for conservation, transmission, fish and wildlife, or other costs so that BPA did not pay the entire costs of its programs.

Appropriations would depend on the willingness of Congress to commit Federal funds to these activities. Federal deficit pressures can be expected make it difficult to obtain appropriations.
[Value: Uncertain.]

- **Transfer program and financial responsibility.** BPA programs, such as energy conservation, fish and wildlife enhancement, or repayment of reclamation projects, and their associated costs could be assigned entirely to other entities through legislation, limiting BPA's program responsibilities and costs to those programs BPA retained.

[Value: Uncertain.]

Table 2.5-1 shows how the response strategies discussed above might apply to the alternatives addressed in this EIS.

Table 2.5-1: Applicability of Response Strategies to Alternatives

STRATEGIES	ALTERNATIVES					
	Status Quo	BPA Infl.	Mkt. Driven	Max. Fin. Returns	Min. BPA	Short Term
Increase Revenues						
Raise firm power rates	—	—	Y	—	Y	Y
Raise transmission rates to cover other power system costs	N	N	N	Y	N	N
Increase unbundled products & services revenues	N	Y	Y	—	N	Y
Increase sales of new products & services	N	Y	Y	—	N	Y
Implement a stranded investment charge	N	Y	N	Y	N	N
Increase seasonal storage	Y	Y	Y	Y	Y	Y
Optimize hydro operations for net revenues	—	Y	Y	—	N	Y
Increase extraregional sales revenues	Y	Y	Y	—	N	Y
Increase joint venture revenues	Y	Y	Y	—	N	Y
Sell assets	N	N	N	N	Y	N
Decrease Spending						
Eliminate power purchases	N	N	N	N	—	N
Reduce BPA spending on corporate overhead	Y	—	—	—	—	—
Reduce WNP-1, -2, & -3 spending	N	Y	Y	Y	Y	Y
Reduce conservation incentive spending	N	N	—	—	—	N
Reduce generation acquisition spending	N	Y	Y	—	—	Y
Reduce pollution prevention & abatement spending	N	Y	Y	—	—	Y
Reduce fish & wildlife spending	N	N	N	—	—	N
Reduce transmission construction spending	N	Y	Y	—	—	Y
Sell capacity ownership in new facilities	Y	Y	Y	Y	—	Y
Reduce operations & maintenance spending	N	Y	Y	—	—	Y
Shift from revenue to debt financing	—	N	N	N	—	N
Increase Treasury borrowing limits	Y	Y	Y	Y	—	N
Lower probability of making Treasury payments	Y	Y	Y	Y	Y	Y
Transfer Costs						
Seek 4(h)(10)(C) credit for fish & wildlife costs	Y	Y	Y	Y	Y	Y
Increase cost sharing for BPA programs	N	Y	Y	—	—	Y
Reallocate FBS costs & debt between power & non-power	—	—	—	—	—	—
Secure appropriations for BPA's costs	N	Y	Y	Y	Y	Y
Transfer program & financial responsibility	N	N	Y	—	—	Y

Y = Consistent with the concept of this alternative under current marketing environment.

N = Inconsistent with the concept of this alternative under current marketing environment.

-- = No change because it provides no mitigation value for the alternative even if consistent, or because all of the benefit of the response strategy has already been attained under this alternative.

2.6 Comparison of the Alternatives

2.6.1 Key Relationships Affecting Loads, Resources, and Environmental Impacts

As noted in chapter 1, market competition limits BPA's maximum sustainable revenues from firm power sales. Increases in BPA's firm power rates up to or beyond the maximum sustainable revenue level lead to predictable consequences for the distribution of firm loads between BPA and other power suppliers in the PNW, the development of new energy resources, the operation of the total regional portfolio of energy resources, and the environmental impacts resulting from those operations. These relationships are fundamental to the impacts of BPA's alternative business directions, as well as the policy choices that are embedded in those alternatives. The text and graphics that follow explain these concepts and relationships. This explanation is framed in general terms to highlight the relationships at work; a detailed view of the market might reveal some exceptions, but the basic relationships are still valid.

BPA's choice among the EIS alternatives will affect BPA's ability to maintain balance in the face of the trend for costs to increase and load to decrease. If BPA's rates under a given alternative are relatively higher, load losses are increased, because BPA is more vulnerable to having the price of alternative power supplies undercut BPA's price. If the terms of BPA service are relatively more burdensome, then more customers will decide not to buy from BPA regardless of price. Each alternative affects these relationships differently. Depending on BPA's costs and the terms of service under each alternative, BPA's loads and its prospects for maintaining balance between revenues and costs vary among the alternatives.

The following figure is a representation of the factors affecting the balance between BPA's costs and revenues. It is explained more fully in the following pages and in chapter 4, section 4.4.1.2.

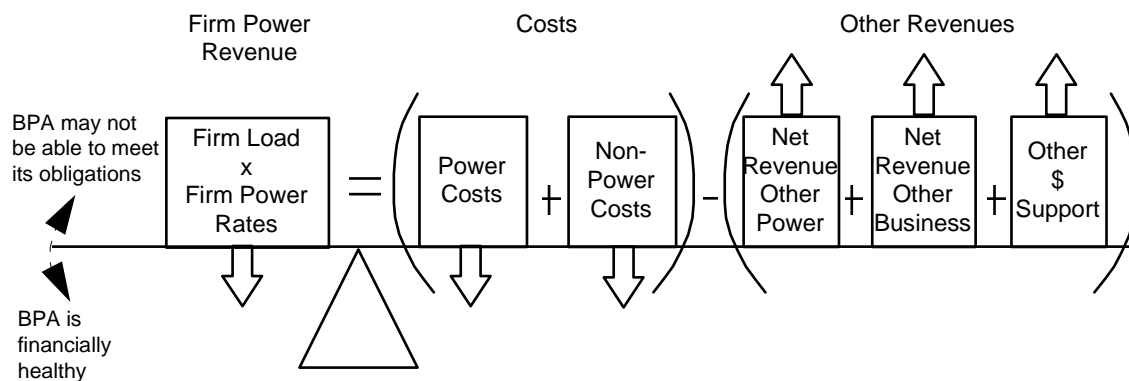


FIGURE 2.6-1

BPA's Market Situation in Relation to Firm Loads and Revenues

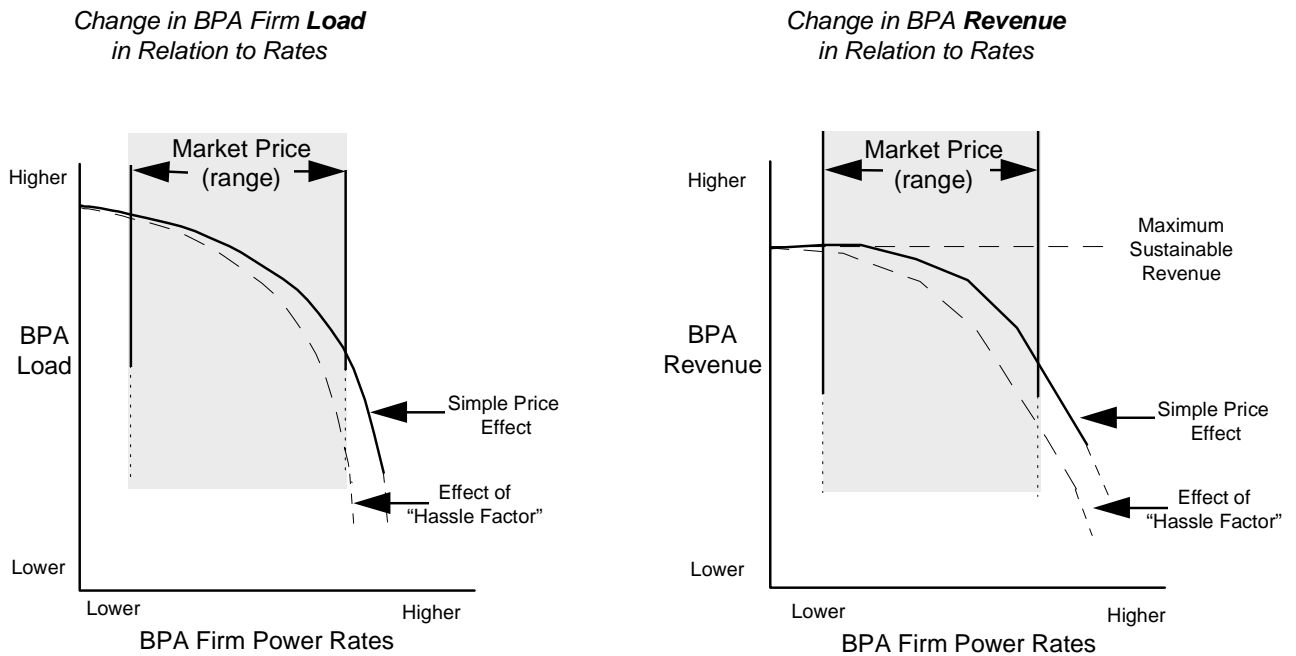


Figure 2.6-1 shows how BPA loads and revenues can be expected to change if BPA's firm power rates fall within the price range for firm power in the regional electric power market. The relationship is straightforward: **the higher BPA's firm power rates, the more firm load BPA loses to other suppliers.** As the charts show, BPA's load and revenue losses are increased if there is a "hassle factor," that is, if customers perceive that buying from BPA is riskier or more burdensome than buying from other suppliers. If so, customers may begin to buy from other suppliers even if BPA's rate is slightly below the market price. The higher BPA's firm power rate in relation to the range of market prices, the more BPA's revenues fall below the maximum sustainable revenue level.

FIGURE 2.6-2

Effect of BPA's Market Situation on BPA and Regional Firm Load

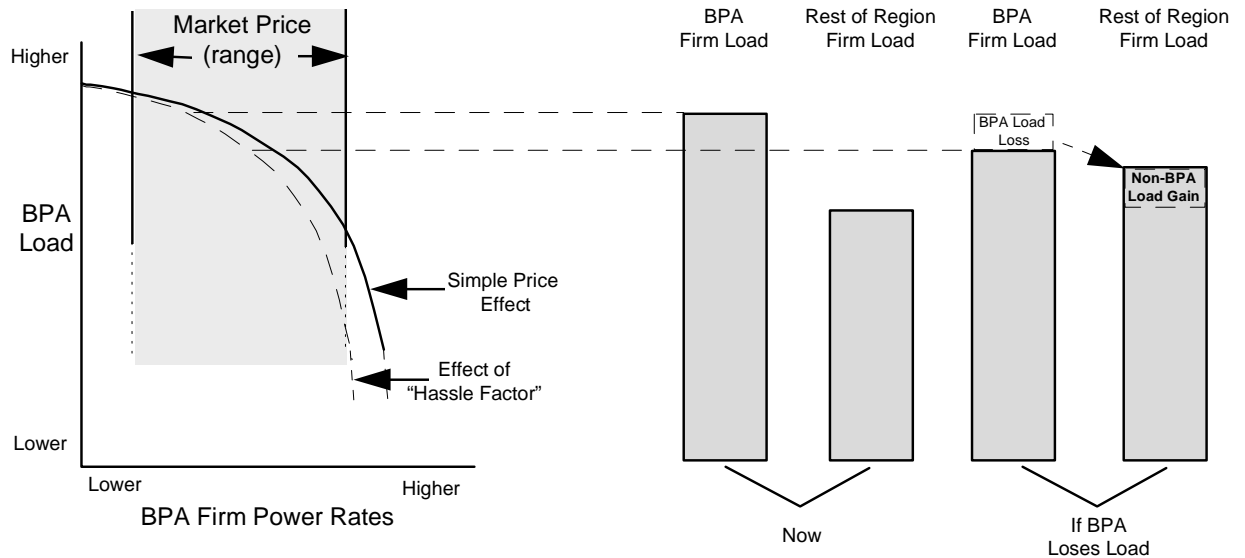
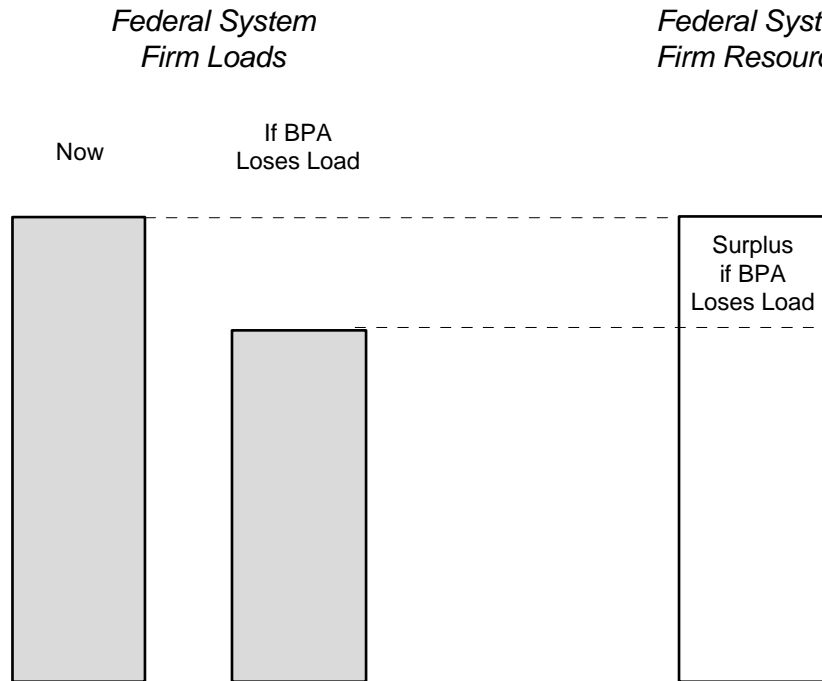


Figure 2.6-2 shows how BPA load losses shift firm load from BPA to other suppliers (the “Rest of Region Firm Load”). As BPA’s firm power rates increase, BPA’s load declines. Since the total regional firm loads will grow at about the same rate whether BPA or other suppliers provide power, *losses* in BPA firm load will mean corresponding *increases* in firm loads served by other regional suppliers (such as other utilities and independent power producers).

FIGURE 2.6-3

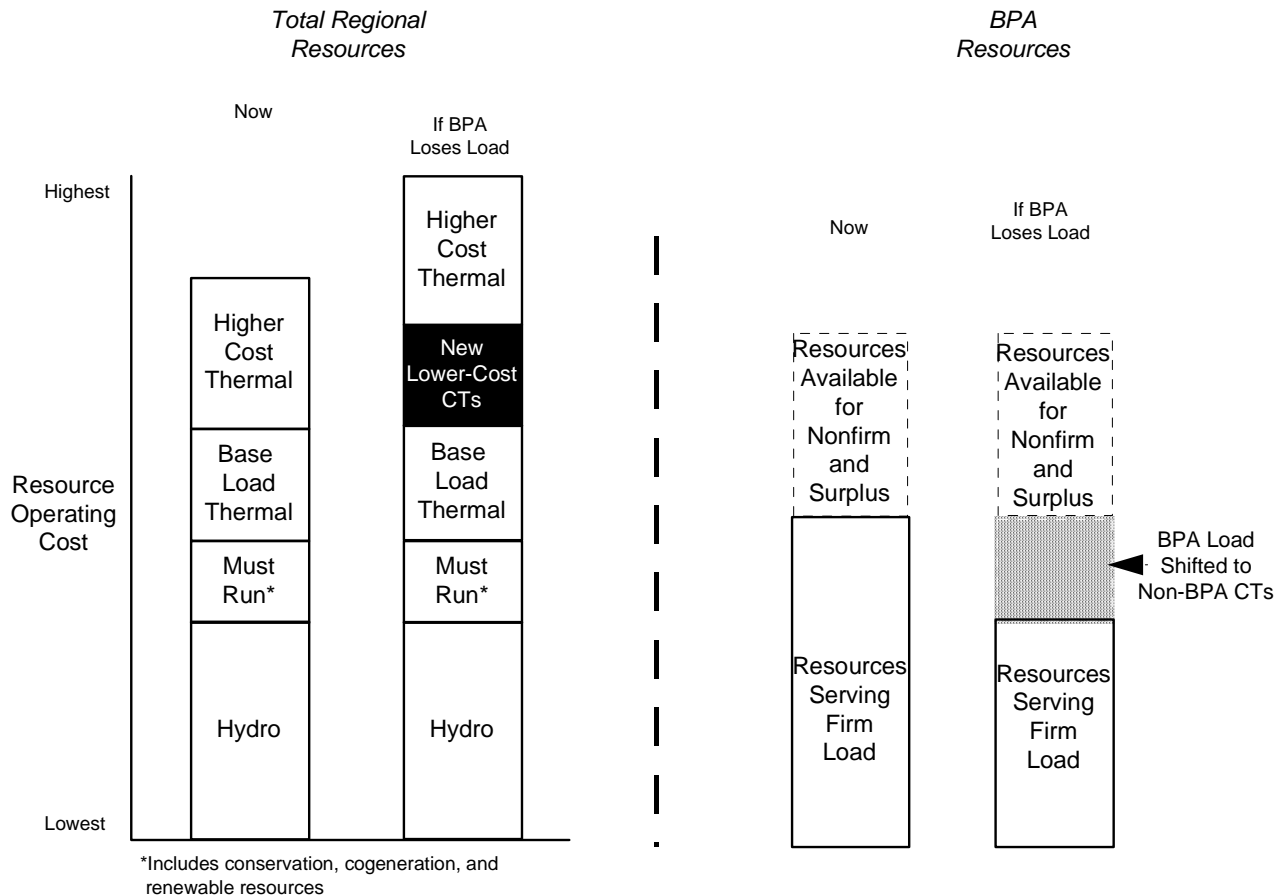
Available BPA Firm Resources Compared to Loads



BPA has planned sufficient firm resources to meet its present and forecasted loads, and currently has resources that roughly balance with its loads. A *loss* of BPA firm load will mean that BPA will have *more* firm resources than loads, as shown in figure 2.6-3. This excess will become *surplus*; BPA will have to sell this surplus power at the highest price the market will permit. However, under current and expected market conditions, surplus power prices are *lower* than BPA's firm rates. BPA will lose money if power formerly sold to serve BPA's firm loads is sold instead as surplus. BPA can mitigate this revenue loss with in-lieu power deliveries under the Residential Exchange Program, but there are limitations on this opportunity under existing and proposed new exchange agreements.

FIGURE 2.6-4

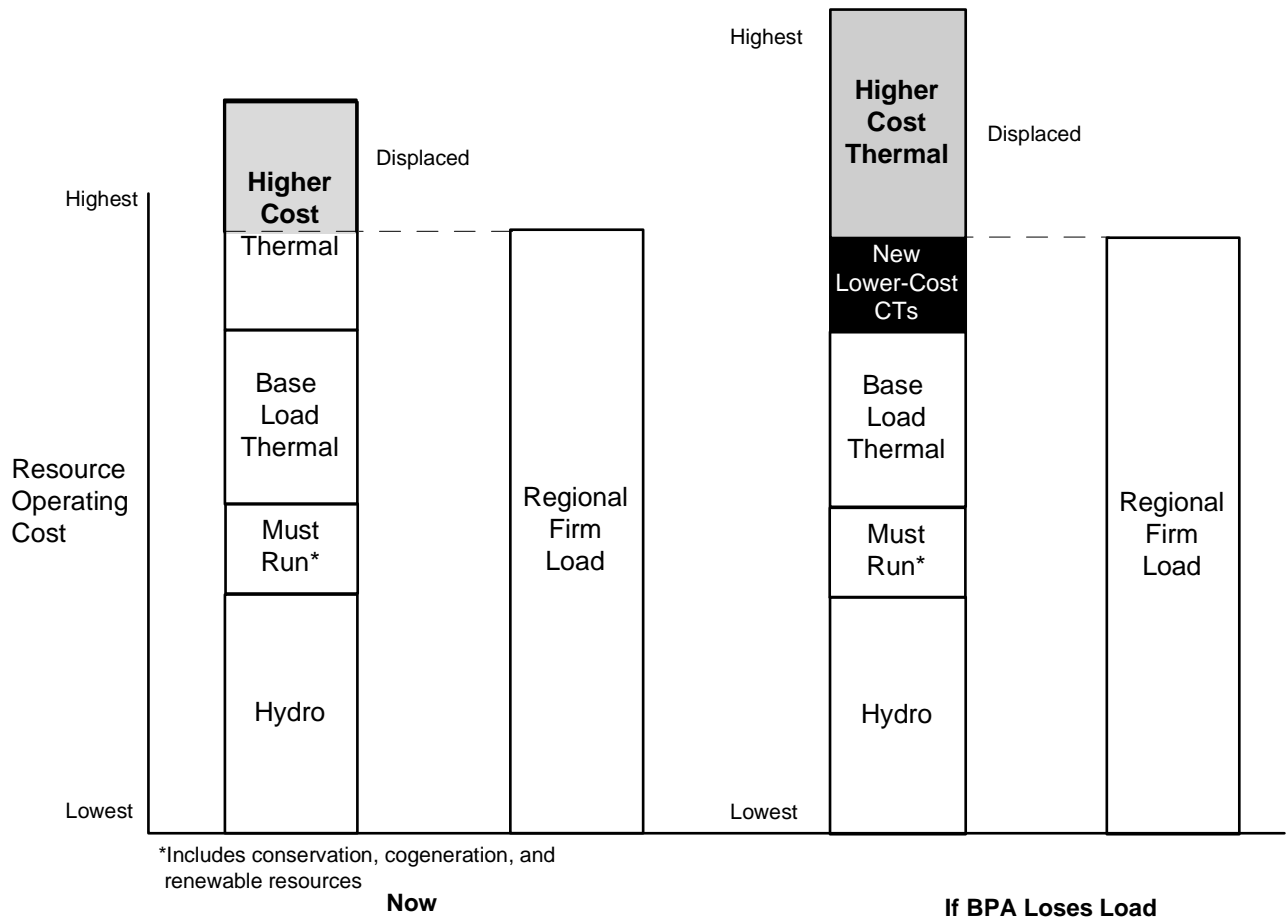
Regional Power Resources Available



In some cases, power marketers that offer service to current BPA firm loads are offering the output of new combustion turbines. Because of their higher fuel efficiency and more reliable performance, these generators produce power at lower cost than some existing thermal generating plants. If current BPA customers decide to shift their firm loads from BPA to these marketers, some new CTs are likely to be constructed to supply power. The left side of figure 2.6-4 shows how new CTs will rank if regional resources are arranged from lowest cost to highest. Some existing thermal resources will cost more than the new CTs. The right side of the figure shows how the portion of BPA's resources that must be marketed as nonfirm or surplus increases when BPA firm load is supplied by new CTs. Where BPA loads shifting to other suppliers are served from existing resources or surplus power, the composition of the regional resources available to serve regional loads does not change.

FIGURE 2.6-5

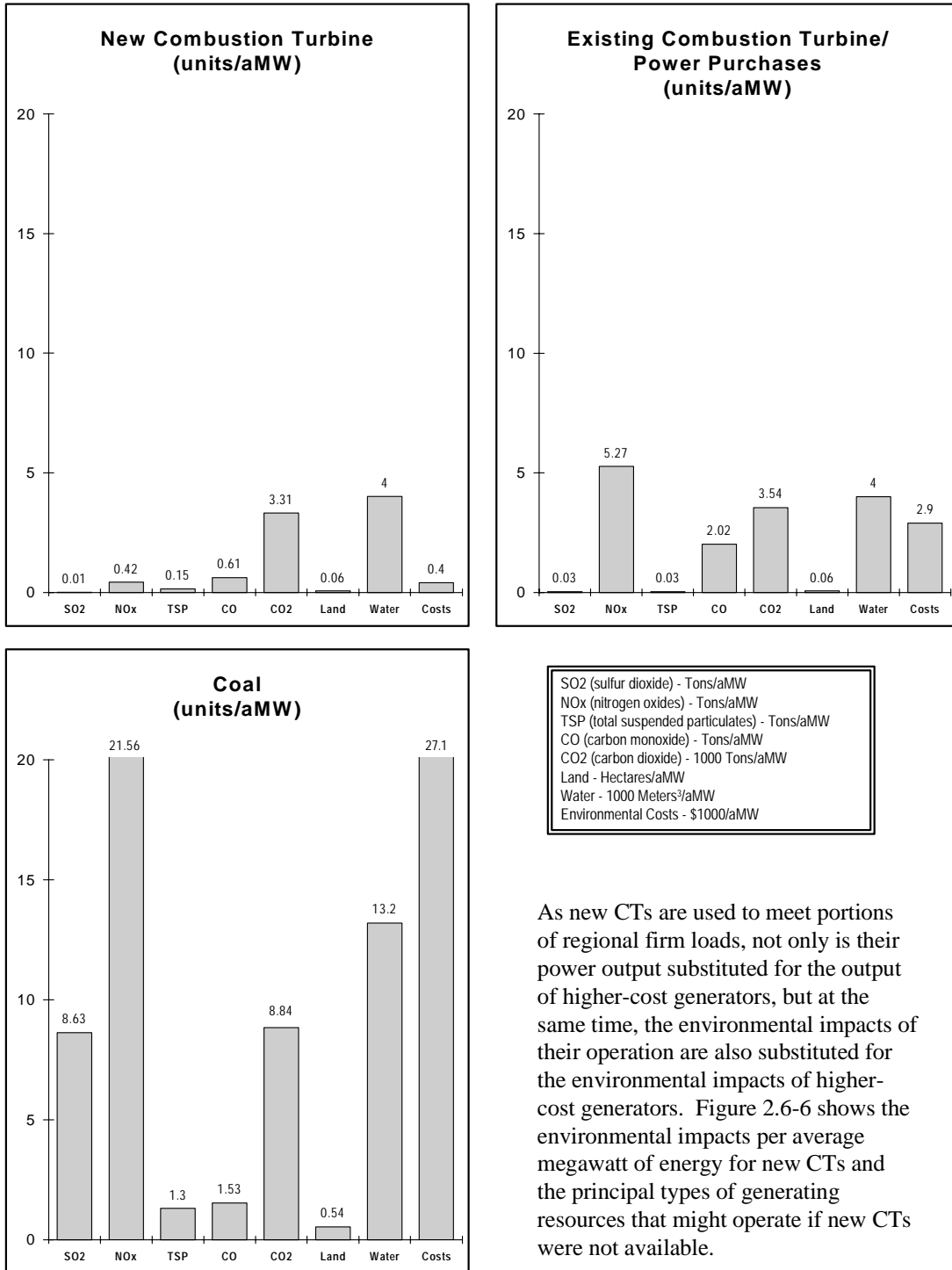
Regional Resource Operations for Firm Load



From a regional perspective, loads are generally served by operating the lowest cost resources first, and then running increasingly more costly resources until loads are met. Figure 2.6-5 shows how the availability of new CTs will make it more likely that existing higher-cost resources will not be needed to meet regional firm load. Because the “fuel” for hydro generation is essentially free (after mitigation for fish and wildlife losses), and its generation potential is lost if it is not used to produce power, hydro consistently will be used to the fullest extent that it is available. The figure does not show the variation in hydro output, which means that even the highest-cost resources may be operated at times. Generally, the effect of the addition of new lower-cost CTs is to substitute their output for the output of higher-cost generators.

FIGURE 2.6-6

Environmental Impacts (Air, Land, & Water) of Principal Types of Displaceable Generating Resources



As new CTs are used to meet portions of regional firm loads, not only is their power output substituted for the output of higher-cost generators, but at the same time, the environmental impacts of their operation are also substituted for the environmental impacts of higher-cost generators. Figure 2.6-6 shows the environmental impacts per average megawatt of energy for new CTs and the principal types of generating resources that might operate if new CTs were not available.

FIGURE 2.6-7

Net Environmental Impacts From Displacement of Thermal Resources By New Combustion Turbines

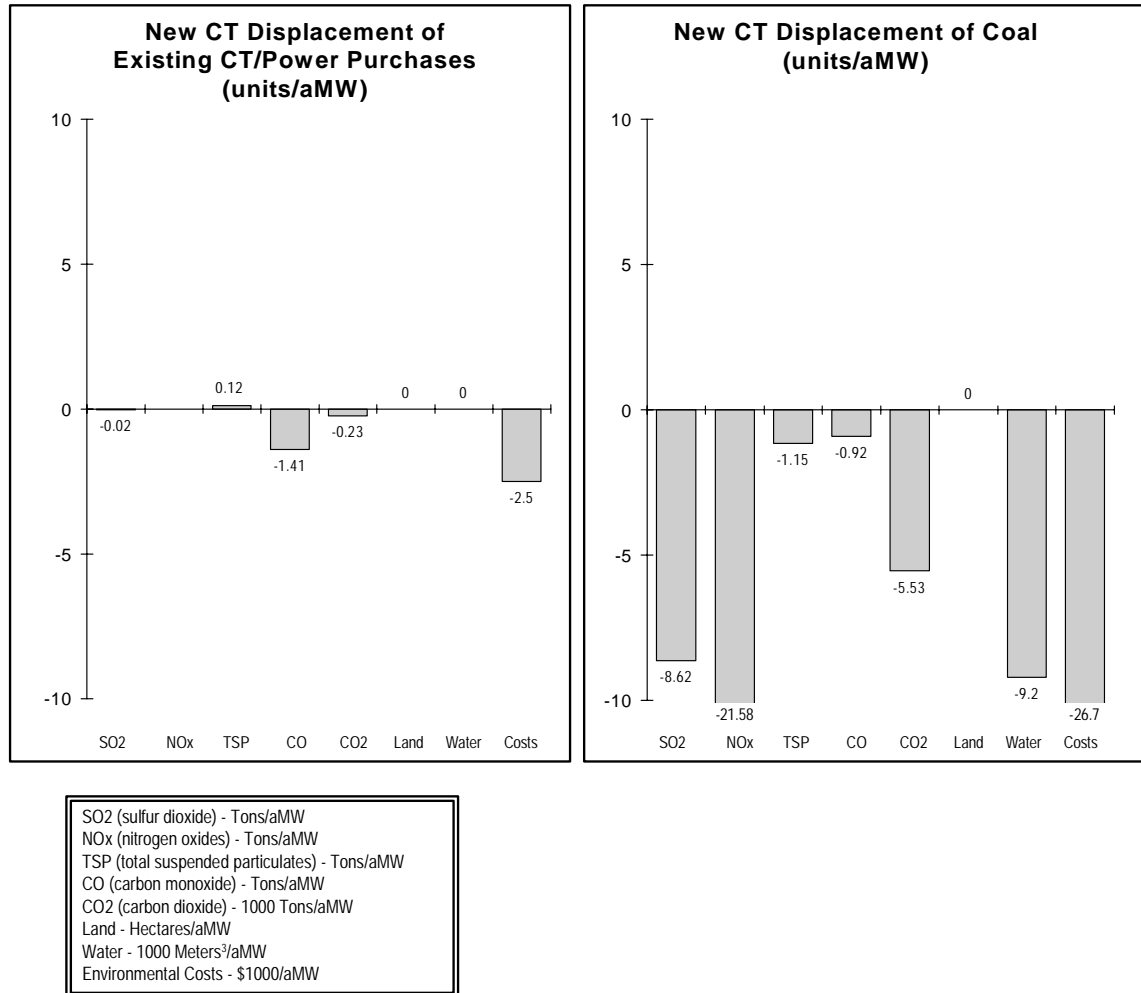
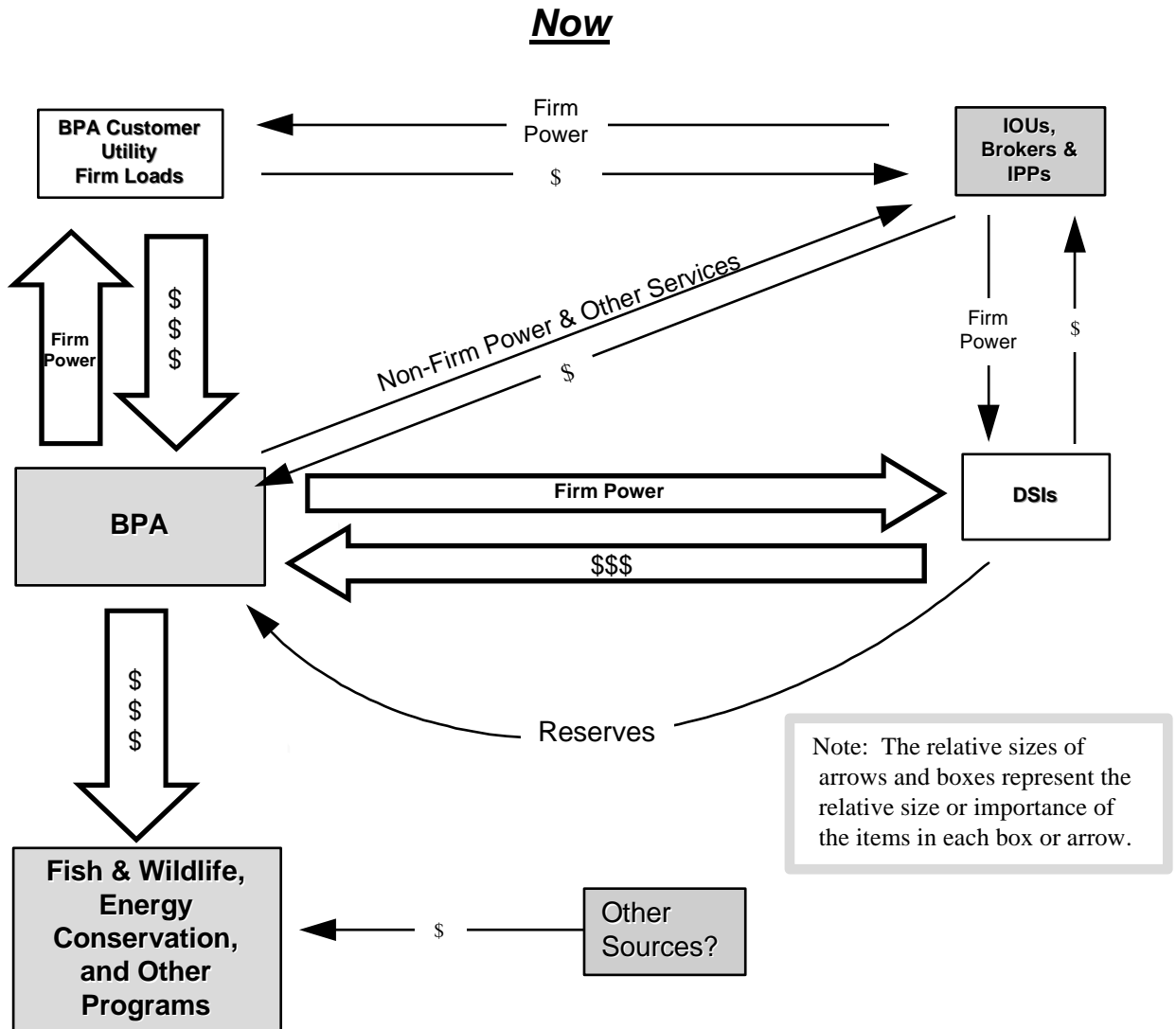


Figure 2.6-7 shows the net environmental impacts per aMW of energy when older existing CTs, power purchases, conventional coal generation, and clean coal generation are displaced by new CT generation. In general, new CT development (in the context of regional resource operations) reduces environmental impacts by producing the same amount of power from a relatively cleaner type of generation. The difference is slight where new CTs displace older CTs, but much larger where new CTs displace coal generation.

Current information indicates that the higher-cost resources that might be displaced by development of new CTs consist of a mixture of existing CTs and coal-fired generating plants. Because the electric utility market is changing so rapidly, however, the relative costs of resources might change. For example, the coal industry could cut costs in response to competition from natural gas. Some resource choices would be affected by the terms of contractual arrangements (e.g., take-or-pay fuel contracts that would defeat any fuel cost savings from displacing a given resource). Although the composition of the higher-cost resource block is uncertain, the information in the figure shows how the net environmental impacts differ among the types of resources involved. The total net impact when new CTs are added to regional resources is the net impact amounts shown in the figure, multiplied by the number of megawatts displaced.

FIGURE 2.6-8

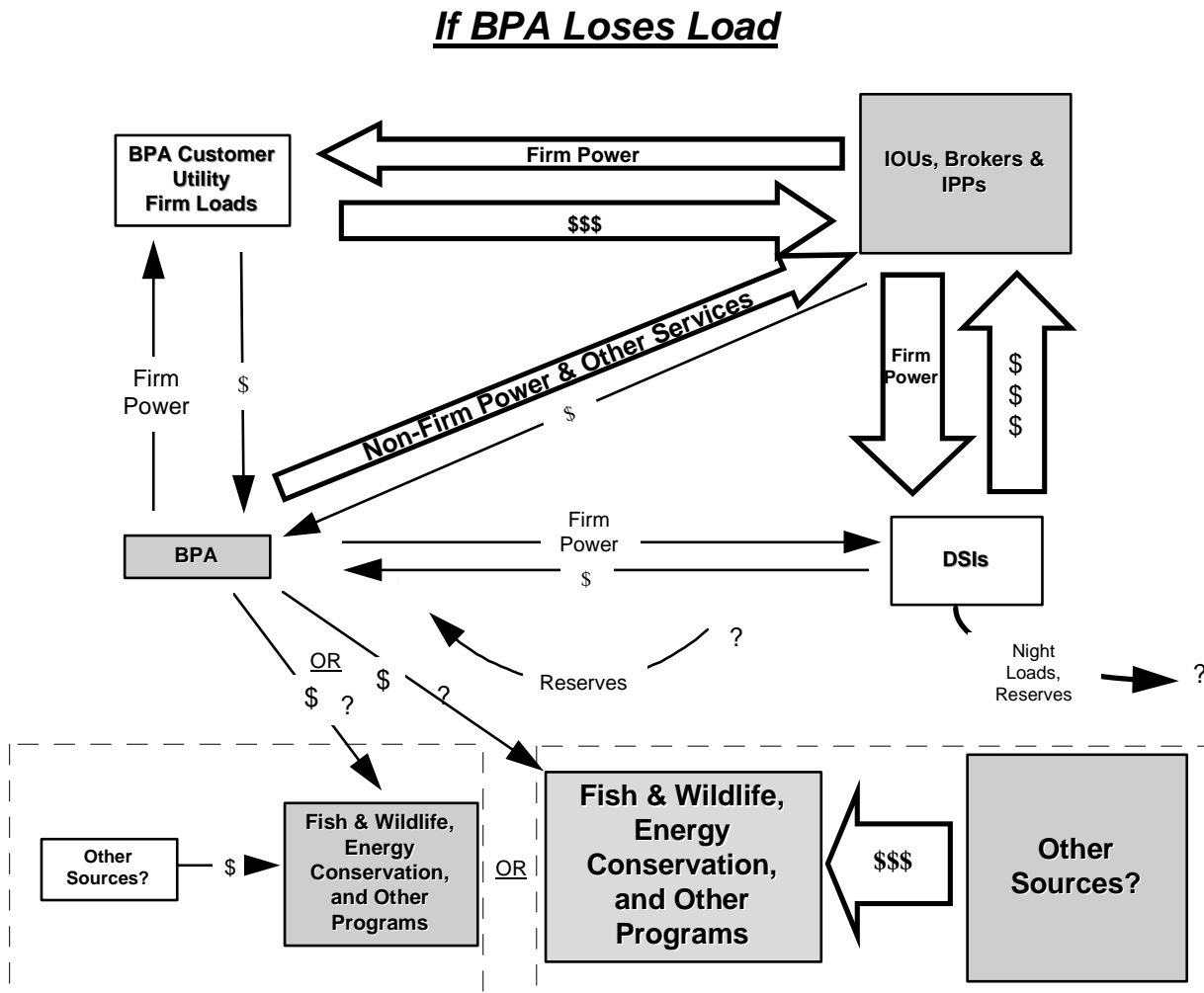
Effects of Changes in BPA Firm Loads on Regional Flow of Revenues and Services



A shift in firm load from BPA to other suppliers would do more than change the makeup of regional power resources. It would also alter the flow of revenues and services in the region, as shown in figure 2.6-8 (continued on next page). At present, BPA provides most of the firm power needs of its utility customers and DSIs, and receives the bulk of its revenues from those sales. **This flow of revenues enables BPA to fund investments in fish and wildlife enhancement, energy conservation, and other programs.** BPA also benefits from DSI loads, which can be interrupted to maintain system stability and which enable capacity sales and exchanges through their high nighttime loads.

FIGURE 2.6-8 (continued)

Effects of Changes in BPA Firm Loads on Regional Flow of Revenues and Services



With a major shift of firm load from BPA to other suppliers (e.g., IOUs, brokers, and IPPs), BPA's revenues would decline. Much of the available Federal hydro output would go to BPA's competitors in the form of lower-priced surplus and nonfirm power and other power services. BPA would also lose the operational benefits of DSI loads, including system stability reserves and nighttime loads. BPA would have to obtain required reserves by other means. **As a result of the loss in revenues, BPA would be less able to continue supporting fish and wildlife enhancement or energy conservation at current levels, and the programs might require substantial new funding from other sources to maintain current efforts.**

2.6.2 Effects of EIS Alternatives Under 1994-1998 Biological Opinion Hydro Operations

The policy direction provided by each of the alternatives would lead to different market responses by BPA and its customers and to different environmental impacts. Figure 2.6-9, at the end of this section, summarizes those market responses and impacts. The alternatives are first compared assuming operations under the SOR's 1994-1998 Biological Opinion, and then assuming operations under the SOR's Detailed Fishery Operating Plan (section 2.6.4) and are based on analysis in Chapter 4. The alternatives are then evaluated against the purposes (section 2.6.5). Note that these comparisons of impacts are made without reference to difficulties in implementing potential alternatives. Section 2.7 analyzes the alternatives' probability of implementation.

2.6.2.1 Status Quo (No Action)

In this alternative, existing rate and contract terms remain in place. BPA would offer utilities and DSIs new firm contracts comparable to current contracts, and would renew existing rate designs, including the Variable Industrial Rate for DSIs. BPA would not respond to the availability of competitively priced alternatives to BPA power.

The following modules are intrinsic to the Status Quo alternative (see section 2.3 for a description of each module):

- FW-1 Status Quo [Fish and Wildlife Administration]
- RD-5 Variable Industrial Rate
- DSI-1 Renew Existing DSI Firm Contracts
- CR-1 "Fully Funded" Conservation

Market Responses

Rates

Continuation of BPA's historical spending would lead to continuing increases in BPA planned spending. Applying the conventional approach to BPA rate-setting would cause BPA to set rates according to costs, regardless of current market prices. Planned spending would result in BPA rate levels above the maximum sustainable revenue level, and higher than under all other alternatives.

Loads

Rates above the maximum sustainable revenue level would stimulate customers to shift significant amounts of firm load away from BPA to other suppliers. In addition, some load loss would result from continued BPA adherence to terms of service that customers view as burdensome. Depending on the price of power from BPA's competitors, BPA could lose one-fourth or more of its utility firm load, and a comparable portion of its DSI firm loads. To the extent allowable under the terms of the Residential Exchange contracts, BPA would deliver surplus power to utilities participating in the residential exchange as in-lieu energy; that is, rather than exchanging BPA power at the PF rate with IOUs at their average system cost in a purely accounting transaction, BPA would actually use its resources to serve exchange loads. BPA would market any remaining surplus at the highest price obtainable, but it is likely that much of the surplus would be marketable only at nonfirm prices, reducing BPA's revenues.

Cost/Revenue Balance

With BPA rate levels above the maximum sustainable revenue level, BPA costs and revenues would not balance in the long term. In fact, the shortfall of revenues versus costs would probably be greater than under

all other alternatives. Because Status Quo assumes no changes from existing policies, response strategies would theoretically not be taken. However, practically speaking, BPA would have to adopt some of the strategies outlined in section 2.5.

Resource Development

BPA would continue with conservation and generation resource acquisition plans as laid out in the 1992 Resource Program, and acquire substantial amounts of conservation, renewable resources, cogeneration, and combustion turbines—more resources than in any other alternative. Because the 1992 Resource Program assumed BPA would serve its historical loads plus load growth, expected load losses under the Status Quo alternative would leave BPA with a large amount of surplus power. Much of the load shifting away from BPA service would be served with power produced by new combustion turbines developed by other parties (such as other utilities or independent power producers). Total regional resource development under the Status Quo alternative would be greater than under any of the other alternatives.

Resource Operations

“Must-run” resources, including baseload thermal plants, cogeneration, and renewable resource generation, would be operated to the extent of their availability. Any new generation developed to serve loads shifting away from BPA would be integrated into the regional energy resource “portfolio” and would generally be operated based on economic considerations. Because this new generation would overwhelmingly consist of new CTs that produce power at lower cost than some existing generation, the new CTs would tend to operate in the place of existing generators. New CTs would produce more power under this alternative than under any of the other alternatives.

Transmission System Development and Operation

BPA would follow through with existing plans for transmission development, to ensure that BPA would be able to provide reliable service to historical loads and anticipated load growth. Current plans include several hundred kilometers of new or replacement 500-kV and 230-kV lines, and the retirement of a lesser amount of 345-kV lines. Where customer loads shift to other suppliers under this alternative, transmission facilities BPA plans for its own use would likely be used to wheel non-BPA power to those loads.

EPA-92 may bring new influences to transmission system planning not reflected in the projections. Although in the past BPA made excess capacity on its transmission system available for non-Federal wheeling, EPA-92 may result in BPA providing transmission service to utilities and non-utility generators, and building new transmission system capacity if needed to provide the wheeling service. EPA-92 would apply in all of the alternatives examined in this EIS.

Even considering the effect of EPA-92, this alternative would probably lead to the largest role for BPA in regional transmission system planning and high-voltage transmission construction among all the alternatives. In this alternative, BPA would continue to plan, construct, and operate its transmission system as it has in the past—that is, with a long-term, one-utility focus, and overall, a very high level of transmission system reliability, which generally requires more transmission facilities than would a lower level of reliability or a shorter-term, more narrowly focused planning horizon.

Consumer Behavior

Retail customers of utilities that continue to be served by BPA could experience retail rate increases higher than under other alternatives. The amount of the increase at the retail level would depend on the share of BPA power in the utility’s overall costs and the degree to which the retail utility passes through the increased cost of BPA power to the retail customer. Higher prices would stimulate consumer energy efficiency measures and fuel switching, particularly to natural gas space heating and water heating. Hardships would occur among lower-income consumers who might not be able to afford energy efficiency measures to compensate for increased electric energy costs. Consumers served by utilities willing to shift load to non-BPA suppliers would

experience retail rate effects of the wholesale market price for power, which is comparable to the current cost of power. Overall, the rate effects of this (and all other alternatives evaluated in this EIS) would not be great enough to affect regional employment growth levels.

Environmental Impacts

Power resource operations would result in air, land, and water impacts. Operations of most existing resources would continue. The major impacts of the Status Quo alternative would be those of new CTs developed to serve historical BPA loads shifting to other suppliers, and those of resources BPA developed by completing its established resource acquisition plans.

The environmental impacts of the operation of new generating plants would be substituted for the operational impacts of older, less economical generation (such as the Valmy and Centralia coal plants or older combustion turbines), which would be operated somewhat less often than under all other alternatives except BPA Influence. Generally, this pattern of operation would result in a reduction in air and water impacts, as the new generators can produce the same amount of power with less fuel and would have to meet current, more stringent emission standards. Land use impacts would stem primarily from new transmission facilities; however, overall, land use impacts would be similar among all the alternatives.

Environmental impacts were compared in terms of environmental externality estimates (in this case, estimates of air quality impacts that are not reflected in the dollar cost of each alternative). Air quality impacts from all new and existing thermal resources were multiplied by the environmental externality estimates BPA developed for sulfur dioxides (SO_x), nitrogen oxides (NO_x), total suspended particulates (TSP), and carbon dioxide (CO₂). The results show that environmental externalities would be slightly lower for Status Quo than for all other alternatives except BPA Influence; however, it should be noted that the maximum difference among all alternatives would be very small.

Overall, it appears that the Status Quo and BPA Influence Alternatives, which have largely comparable levels of environmental impacts, would be the environmentally preferred alternatives; however, environmental impacts of all alternatives would be within a fairly narrow band, and several of the key impacts (e.g., TSP and CO emissions) would be virtually identical across alternatives.

2.6.2.2 BPA Influence

Under the BPA Influence alternative, BPA would make the same conservation program expenditures as under Status Quo. In addition to fully funding conservation and maximizing acquisition of renewables, BPA would provide incentives for the development of additional renewable resources, and would offer a “Green” Firm Power rate to customers who would like to acquire power served by renewable resources. DSIs would be offered firm service in the spring only; as a result, about half of the DSI load would shift away from BPA to self-generation, other utilities, or IPPs. BPA’s rates to utility customers would be seasonal rates based on historical streamflows to reflect hydro availability. Rates also would be also tiered, and the Tier 1 size would be based on a fixed percentage of FBS firm capability, calculated on a monthly basis to reflect streamflows. The irrigation discount (a rate discount to utilities for farmers who use electricity for irrigation or drainage) would be eliminated. BPA would reduce its resource acquisitions slightly from Status Quo, but still would have significant amounts of surplus firm power. A portion of the surplus power would be used (as under Status Quo) to serve “in-lieu” loads of IOUs that participate in the Residential Exchange program.

This alternative involves the second-greatest regional resource acquisition and therefore is capital-intensive and risky in the face of uncertainty in resource technology, electricity price, and end-use demand. BPA would be using capital resources that the region might use for other developments with greater economic benefits. Structurally, under this alternative, a few decisionmakers (the Council and BPA) would be making major energy decisions on behalf of the region, continuing the historical pattern of PNW energy planning that developed the Federal system, the Canadian Treaty, the Southern Intertie, and the Hydro-Thermal Power Program. This planning paradigm is the “one-utility concept,” which has been the planning concept for the development of the present regional wholesale power system.

The following modules are intrinsic to the BPA Influence alternative (see section 2.3 for a description of each module):

- FW-2 (BPA-Proposed Fish and Wildlife Reinvention)
- RD-3 Streamflow Seasonal Rates—Historical
- RD-4 Eliminate Irrigation Discount
- RD-7 Resource-Based Tier 1
- DSI-2 Firm Service in Spring Only
- CR-1 Fully Funded Conservation
- CR-2 Renewables Incentives
- CR-3 Maximize Renewables Acquisition
- CR-4 “Green” Firm Power

Market Responses

Rates

This alternative assumes a tiered rate design, with a Tier 1 size based on a monthly calculation of the amount of available firm FBS resources; both Tier 1 and Tier 2 rates would be seasonally defined, based on historic streamflows. Program reinventions, cost-cutting, and other actions in response to the changes in the electric energy market would lead to lower BPA rates than under the Status Quo alternative. However, continued incentive funding for conservation and the effects of load losses would tend to keep rates near, and perhaps slightly above, the maximum sustainable revenue level—higher than under all alternatives other than Status Quo.

Loads

Utility load losses under this alternative would be less than under the Status Quo alternative because of lower BPA rates and improved marketing practices. On the other hand, DSI load losses would be greater, because a large portion of the DSI load would choose firm service from others rather than accept interruptible service from BPA during most of the year (in this alternative, DSIs would receive firm service only in the spring). Some utility customers would also move load away from BPA because of contract terms that they would find onerous.

Cost/Revenue Balance

Given its high rates and relatively lower loads, this alternative is least likely, after Status Quo, to achieve cost/revenue balance. A continued fall in the market price of electricity would make it even more difficult for BPA to maintain its financial integrity in this alternative. BPA would have to undertake response strategies to try to achieve balance.

Resource Development

BPA would acquire most of the resources planned under the 1992 Resource Program, including energy conservation, but with more renewable resources than Status Quo (more than in all other alternatives) because of incentives for renewable resource acquisitions and the policy goal of maximizing renewable resource acquisition. To compensate, BPA would reduce planned power purchases, and acquire less of the output of combustion turbines. Because of the expected load losses described above, BPA would still have a sizable surplus of firm power, which would be delivered, as under the Status Quo alternative, as in-lieu power to utilities participating in the Residential Exchange, or sold as surplus. Suppliers serving former BPA loads

would typically construct CTs to supply those loads. Total regional resource development would be less than the Status Quo alternative, but nonetheless almost 1,000 aMW more than all remaining alternatives.

Resource Operations

Existing thermal generation would operate at generally the same level as under the Status Quo alternative, but slightly less newer CT generation (built to serve former BPA loads) would displace older higher-cost generation.

Transmission System Development and Operation

The major difference between this and the Status Quo alternative is that BPA would provide priority access and/or rate discounts to utilities that comply with the Council Plan and Program. Some customers that would not qualify for such access or discounts might try to find transmission services from other sources, build their own transmission, or build local generation. The overall effect might be a slightly smaller role for BPA in regional transmission system development than under the Status Quo alternative. However, because this alternative is based on continuing BPA's role as the central planner for the region, transmission development would probably be about the same as for the Status Quo alternative.

Consumer Behavior

Due to lower BPA costs than the Status Quo alternative, BPA rates would be slightly lower, and the price effects on consumers also would be slightly reduced. As with the Status Quo alternative, the largest effect would occur among consumers served by utilities relying entirely on BPA for power; however, little or no price-induced conservation or fuel switching is expected.

Environmental Impacts

Environmental impacts generally would be very similar to those of the Status Quo alternative; however, there would be slightly lower air and water impacts because there would be slightly fewer new CTs constructed, while the operations of existing thermal generation would be the same. Environmental externality costs would be only very slightly lower than under Status Quo. Land use impacts would be slightly higher than all other alternatives because of the large amount of renewable resources, which are more land-intensive than other resources. This alternative and the Status Quo would be the environmentally preferable alternatives, although the range of impacts among all alternatives would be generally similar.

2.6.2.3 Proposed Action - Market-Driven

In the Market-Driven alternative, BPA would cut costs and, in the long term, implement tiered rates that vary by season to reflect overall resource availability. The irrigation discount would be eliminated. DSIs would be offered firm service, but the amount of firm service would decline over time. BPA would offer a "Green" Firm Power product to those utilities that desire it (but because this product covers its own costs, it would be revenue-neutral to BPA). In the long term, tiered rates would stimulate price-induced fuel-switching and conservation independent of BPA programs. Expected BPA rates would be lower due to reductions in expenditures for conservation, transmission system development, and administration. BPA would reduce its resource acquisitions and eliminate the surplus that exists in the Status Quo alternative.

With BPA in less of a central planning role than under the BPA Influence or Status Quo alternatives, there would be more decisionmakers for resource acquisitions, and the region would be less likely to pursue a single resource acquisition strategy. If conditions were to change or one strategy were not successful, the consequences would affect the entities that adopted that strategy, but would not necessarily affect the whole region, so the overall risk of failure (that is, power deficits or overbuilding leading to stranded investments) might be reduced. A disadvantage of more diversified decision-making is that incomplete coordination might

lead to increasing the total amount of resources and facilities developed, although market pressure would tend to reduce this risk.

The following modules are intrinsic to the Market-Driven BPA alternative (see section 2.3 for a description of each module):

- FW-2 BPA-Proposed Fish and Wildlife Reinvention
- RD-1 Seasonal Rates - Three Periods
- RD-4 Eliminate Irrigation Discount
- RD-6 Load-Based Tier 1
- DSI-3 Declining Firm Service
- CR-4 “Green” Firm Power

Market Responses

Rates

Lower conservation, transmission system development, and administrative costs would make BPA’s rates lower under this alternative than under either the Status Quo or the BPA Influence alternative; only Minimal BPA would have lower rates. However, rates would still be close to the maximum sustainable rate level. In the long term, BPA would develop a tiered rate design, with a Tier 1 size based on a percentage of historical loads for each customer and a percentage of the existing capability of FBS resources. Federal system capability serving Tier 1 loads would be fixed (purchased power would make up any gap). The Tier 2 price would equal the estimated BPA marginal cost for each year.

Although tiered rates would be part of this alternative in the long term, in the short term, BPA would probably not implement a tiered rates proposal, for three reasons:

- the costs of new power have dropped so rapidly that there would be no substantial difference between average costs of power and marginal costs;
- customers are moving to develop conservation programs themselves, even without a BPA tiered rate signal; and
- under current market conditions, tiered rates appear to be a disincentive to doing business with BPA and at odds with the orientation of the alternative, which is to be customer-focused.

Loads

This alternative would allow customers to make decisions about power supplies and resource development based on their own criteria, without additional conditions for BPA service, as under the BPA Influence alternative. Unbundled power products would also provide flexible service options to customers. Systematic efforts to meet customer needs and lower rates would reduce BPA’s firm utility and DSI load losses so that BPA would continue to serve the bulk of its historical loads. Load losses would be due mainly to customers diversifying their sources of power in order not to depend as heavily on BPA, but would be a fraction of the load losses under the Status Quo or BPA Influence alternatives.

Cost/Revenue Balance

Overall, this alternative would be more likely than Status Quo to maintain BPA’s cost/revenue balance because cost-containment and the development of products and services that respond to customer needs would help reduce rate increases and retain load.

Resource Development

BPA direct conservation acquisition would be reduced, but independent conservation programs carried out by customers would make up the difference, so that conservation targets for BPA loads would continue to be achieved. BPA would acquire renewable resources to support sales of “green” firm power to utilities that pay for that product’s additional cost. Power purchases would be greater, but other BPA resource acquisitions would be the same as under the BPA Influence alternative. Because BPA loads would be higher, there would be little if any surplus. Any in-lieu power deliveries under the Residential Exchange would be based on spot market power purchases. Regional resource development would be substantially less than under the Status Quo or BPA Influence alternatives because fewer new CTs would be developed to serve loads shifted away from BPA. If market competition and low gas prices continued to put downward pressure on the market price for power, existing baseload resources, such as WNP-2, would become increasingly uneconomic, and could be shut down. It is likely that additional power purchases or CT development would replace any such terminated baseload resources.

Resource Operations

With less new CT generation, new CT operations would be half the amount in the Status Quo or BPA Influence alternatives, and the operations of existing displaceable generation would be slightly greater.

Transmission System Development and Operation

BPA could continue its role as the main provider of regional transmission facilities. The major difference between this and the Status Quo alternative is that, after BPA reviews its reliability criteria with its customers, it is likely that BPA’s transmission system would evolve over the long term toward a lower-cost, somewhat lower-reliability system. In addition, unbundling transmission services and pricing transmission using more distance-based rates and opportunity and incremental pricing, to the extent adopted, would lead to clearer price signals that might lead to more efficient transmission development. Making wheeling contracts assignable might mean that the existing transmission system would be used more efficiently and that less new transmission would be needed.

If BPA’s customers wanted BPA to reduce overall transmission costs by planning toward a somewhat less stringent reliability standard, BPA would construct less new transmission capacity, and operate the existing capacity at higher load factors (i.e., closer to “full capacity”). New facilities would be constructed as needed to serve Federal loads, to respond to FERC-ordered transmission service (where existing capacity is fully utilized), and where the costs of adding new capacity can be recovered by wheeling revenues for the facility in question. System outage frequencies could increase somewhat, as transmission facilities would be constructed and operated with lower “reserves.” Transmission pricing signals could lead to more local generation and some degree of increased transmission development by utilities other than BPA.

Consumer Behavior

BPA rates would be comparable to market rates, and lower than under Status Quo and BPA Influence alternatives. Retail rates would be directly influenced by the market price for wholesale power, whether the utility was supplied by BPA or by others. Because of the lower cost of BPA power in this alternative, fuel-switching and price-induced conservation likely would be less than under the Status Quo and BPA Influence alternatives.

Environmental Impacts

Less new CT construction and operation and increased operation of existing generation would result in increased impacts of existing thermal generation compared to the Status Quo or BPA Influence alternatives. The higher emissions levels of those older, less-efficient thermal resources would result in higher levels of air emissions and water use from power generation under the Market-Driven alternative than under the Status Quo or BPA Influence alternatives. Environmental externality costs associated with air emissions of new and

existing thermal generation would be slightly higher than under Status Quo, again primarily because of higher amounts of existing thermal (especially coal) operation.

2.6.2.4 Maximize BPA's Financial Returns

In the Maximize Financial Returns alternative, BPA would cut costs without implementing tiered rates, resulting in increased revenues. Expected BPA rates would be lower due to reductions in conservation, generation, and transmission system development compared to Status Quo. Unbundling would aid in maintaining customer satisfaction to help keep firm loads on BPA. Lower prices would retain and in some cases increase loads, eliminating any potential BPA firm surplus, and requiring increased power purchases as a way to meet load.

In the Maximum Financial Returns alternative, as in the Market-Driven alternative, numerous decisionmakers would be choosing energy purchases or resource developments. Development efficiency might be lower if the individual decisions were not coordinated, but errors arising from incomplete information or changing conditions would tend to be smaller, and the consequences less than would result from misdirection of a comprehensive regional plan. Fish and wildlife and energy conservation would be judged by strict business standards, which would tend to reduce financial support and thus the chances of achieving goals for those resources.

The following modules are intrinsic to the Maximize Financial Returns alternative (see section 2.3 for a description of each module):

- FW-3 Lump-Sum Transfer
- RD-4 Eliminate Irrigation Discount
- DSI-5 100- Percent Firm Service
- CR-4 "Green" Firm Power

Market Responses

Rates

Consistent with the principles of this alternative, BPA's would set its rates close to, but not above, the maximum sustainable revenue level. This would lead to rates that would be comparable to those in the Market-Driven BPA alternative.

Loads

BPA would retain most of its historical utility and DSI load. Minor load losses would occur due to pricing at the maximum revenue level, but if BPA correctly estimated that level, revenues would not be reduced. As with the Market-Driven alternative, some BPA load loss would be unavoidable regardless of price, due to the desire of some customers to diversify their sources of power beyond BPA.

Cost/Revenue Balance

This alternative would be more likely than any other except Minimal BPA to achieve cost/revenue balance because BPA would cut program costs as necessary to maintain its prices at a level that retains loads.

Resource Development

BPA would acquire less conservation, terminating contracts that were not self-supporting and replacing them with power purchases. Conservation acquisition would be less than under all alternatives except Minimal BPA, and power purchases would be higher than under all other alternatives. Because BPA would retain most of its load, competitors would build fewer new CTs to serve load moving away from BPA service. However, as

in Market-Driven BPA, if market competition and low gas prices continued to put downward pressure on the market price for power, existing baseload resources, such as WNP-2, would become increasingly uneconomic, and could be shut down. Additional power purchases or CT development likely would replace any such terminated baseload resources.

Resource Operations

Existing thermal generation, often in California, would operate more to provide power for BPA purchases. Overall, the operation of existing CTs and coal would be higher than in all other alternatives.

Transmission System Development and Operation

BPA's transmission system planning and development would focus on maximizing returns from each component of the transmission system. EPA-92 (and BPA's other statutes) could prevent BPA from receiving significant "profits" from specific transmission investments, because it would allow FERC to order utilities to provide transmission service on existing and new facilities, priced on a cost-recovery basis. However, BPA might construct new transmission facilities to access new markets for power sales or sources of power. For example, it might participate in the development of new transmission links to the Inland Southwest in order to make sales and exchanges to that region, or it might construct additional transmission capacity to access gas supplies in Alberta (if it could not gain access to the same markets through FERC-ordered transmission service on other utilities' facilities). BPA might also sell existing facilities for which revenues do not cover the costs of operations, maintenance, and repair. Transmission of Federal power would be sold separately from power sales, and the range of costs of transmitting Federal power to different parts of the BPA system would be reflected in the range of costs paid by customer utilities. Generally, BPA would tend to construct 500-kV lines, but would markedly reduce 230-kV construction. Other entities would increase construction of 230-kV lines.

Consumer Behavior

BPA's rates and retail rate effects on consumers would be similar to the Market-Driven alternative, except that there might be some fuel switching to electricity.

Environmental Impacts

Increased operation of existing thermal generation, both to continue serving regional loads and to replace terminated energy conservation programs, would result in increased impacts of those generators compared to the Status Quo or BPA Influence alternatives. Because this alternative involves a high level of power purchases, it is likely that much of the thermal generation would occur outside the region (e.g., in the Pacific Southwest). The primary influence on air quality impacts would be the high existing coal operations under this alternative, which are higher than all others. As a result, environmental externality estimates for air quality impacts of this alternative would be higher than under any other alternative except Minimal BPA.

2.6.2.5 Minimal BPA Marketing

In the Minimal BPA Marketing alternative, BPA would cut costs and eliminate all resource acquisitions recommended in the 1992 Resource Program, including conservation, that are not already under construction. Without the added cost of new resource acquisitions and transmission construction, BPA's rates would remain low, but the limited supply of BPA power would force customers to acquire resources to serve their long-term load growth. Expected BPA rates could be lower due to reductions in the costs of conservation and transmission system development. Because BPA would sell all of its limited supply of firm power, there would be no BPA firm surplus. The rest of the region would develop resources at market prices, the vast majority of it CTs, but also some conservation, to serve load growth.

The Minimal BPA alternative, like the Market-Driven BPA alternative, has numerous decisionmakers involved in development of the regional power system, with the same effects as those under the Maximize Financial Returns alternative.

The following modules are intrinsic to the Minimal BPA alternative (see section 2.3 for a description of each module):

FW-3 Lump-Sum Transfer

DSI-3 Declining Firm Service

Market Responses

Rates

BPA rates would be the lowest of all of the alternatives, because BPA would not incur any costs for new resources.

Loads

BPA would continue serving its historical loads, up to the limits of current system generating capability. BPA would serve utility customers' load growth if power were available from existing resources. BPA would serve DSI loads only if power were available after utility loads were served. Overall, compared to Status Quo, this alternative would probably lead to higher loads placed on BPA by utilities in the short term because rates would be lower than in Status Quo. Although they could not be assured of BPA firm service in the long term, DSIs would be likely to place more load on BPA than under Status Quo because BPA's rates would be lower (that is, this alternative would not lead to as much short-term DSI load loss as under Status Quo).

Cost/Revenue Balance

Because BPA could sell all of its limited supply of firm power due to its relatively low cost, there would be no BPA firm surplus, and costs and revenues would balance.

Resource Development

BPA would not develop new resources, and would terminate acquisition of new resources planned under the 1992 Resource Program. BPA's utility customers would have to develop resources as needed to supply load growth. DSIs would have to buy power from other suppliers to replace BPA power as utilities exercised their preference rights to power historically used to serve DSI loads. Conservation acquisition would be lowest among the alternatives, because BPA conservation programs would be terminated. Most of the new resources developed to serve utility or DSI loads would be new CTs. Total regional new CT development would be comparable to amounts developed under the BPA Influence alternative, but more than twice as much as under Market-Driven BPA. Overbuilding would be possible if regional development of generating resources were not effectively coordinated, particularly if developers built ahead of demand on the expectation of marketing surplus output. However, market pressures would tend to reduce this risk.

Resource Operations

The total operations of new CTs and existing thermal generation would be higher than under all other alternatives.

Transmission System Development and Operation

In this alternative BPA would continue to maintain and replace existing transmission facilities, but would construct few new facilities. Although under EPA-92 FERC could order BPA to construct transmission

capacity for a party requesting such service, it is assumed here that BPA would avoid significant new construction. New transmission capacity to serve new load and to integrate generating resources would be constructed by other utilities. Over time, the responsibility for maintaining the reliability of the transmission system by adding capacity would devolve toward other utilities. Less 500-kV transmission would be constructed in the region; this reduction would be only partially replaced by the construction of new 230-kV transmission facilities by other utilities. Other utilities would take on larger transmission development roles; however, the overall growth in regional transmission capacity would probably be less than under the Status Quo alternative.

Consumer Behavior

Because BPA's rates would be lower than under all other alternatives, to the degree that utilities are served by BPA, retail rates would also be lower than under other alternatives. Because retail rates could be lower, there probably could be some amount of fuel-switching to electricity and away from natural gas.

Environmental Impacts

The operation of existing and new thermal generation would be higher than under other alternatives, in part because the amount of conservation developed in the region would be lower than under any of the other alternatives. Existing, less efficient and clean thermal resources would be operated more often than under Status Quo, and as load growth occurred, additional new thermal resources (probably CTs) would be added. Consequently, air quality impacts and water use would be higher than under other alternatives. Environmental externality estimates for air quality impacts of this alternative would be higher than under all other alternatives (but still would be only about 13 percent higher than under Status Quo).

2.6.2.6 Short-Term Marketing

For the Short-Term Marketing alternative, BPA would cut costs and eliminate new resource acquisitions and new conservation, unless it were cost-effective in 5 years or less. Without the added costs of new resource acquisitions and transmission construction, BPA's rates would remain low, but the limitation on BPA power to short-term sales would cause the generating customers to obtain their own supplies. As a result, BPA would have a substantial firm surplus. To the extent allowable under the terms of the residential exchange contracts, BPA would deliver surplus power as in-lieu energy to utilities participating in the Residential Exchange.

The following modules are intrinsic to the Short-Term Marketing alternative (see section 2.3 for a description of each module):

- FW-2 BPA-Proposed Fish and Wildlife Reinvention
- RD-4 Eliminate Irrigation Discount
- RD-8 Market-Based Tier 2
- DSI-3 Declining Firm Service

Market Responses

Rates

Reductions in conservation and transmission program spending would lead to lower rates than under Status Quo, comparable to the Market-Driven alternative.

Loads

Although BPA's relatively lower rates would help retain load, limiting contracts to 5 years would cause some utility customers desiring long-term power supplies (especially generating utilities) to shift to other power sources. DSI loads would probably be comparable to Status Quo levels.

Cost/Revenue Balance

While BPA's costs would be the same as the Market-Driven alternative, the limitation on sales to a 5-year maximum term might make it more difficult for BPA to recover its costs and thus maintain stable rates in the long term. Response strategies might be necessary.

Resource Development

BPA would function primarily as a broker, making long-term acquisitions only if they were economically justified in support of short-term marketing. Therefore, overall, BPA's resource acquisitions would be less than all alternatives except Minimal BPA; other utilities' resource acquisitions would be less than under Status Quo but more than under the Market-Driven alternative.

Resource Operations

Existing thermal generation generally would be operated at higher levels than under Status Quo; new CT operations, however, would be lower than under Status Quo.

Transmission System Development and Operation

BPA would phase out long-term contracts and market new power and transmission services only on a short-term basis (less than 5 years), to the extent that doing so is consistent with EPA-92. BPA would have almost no incentive to construct new transmission, unless it were offered long-term no-risk contracts to construct specific new facilities. The effects on transmission system development would probably be similar to those of the Minimal BPA alternative; i.e., less BPA and more non-BPA transmission development in the short term, and more localized generation (e.g., CTs and cogeneration).

Consumer Behavior

BPA's rates would be lower than under the Status Quo alternative; BPA and retail rates would probably be comparable to the Market-Driven alternative, with little or no price-induced fuel-switching compared to Status Quo.

Environmental Impacts

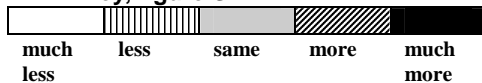
In this alternative, BPA would acquire fewer conservation and generation resources than under Status Quo. The impacts on air and water from the operation of new and existing resources would be higher than under Status Quo, primarily because of increased operation of existing, less clean and efficient thermal generation. However, such impacts would probably be lower than under Maximize Financial Returns and Minimal BPA alternatives. Overall, the environmental externality estimates for air quality impacts of this alternative would be higher than under all alternatives except Maximize Financial Returns and Minimal BPA.

Figure 2.6-9: Summary Comparison of EIS Alternatives Under Current Hydro Operations

[Comparisons are to the Status Quo alternative. Conclusions are based on illustrative numerical analysis and professional judgment]

		Status Quo	BPA Influence	Market-Driven	Maximum Financial Returns	Minimal BPA	Short-Term Marketing
R A T E S	Average PF Rate						
	Average IP Rate						
F I R M L O A D S	BPA Utility Firm Load Loss						
	BPA DSI Firm Load Loss						
	Total Regional DSI Load						
	Total BPA Firm Load Loss						
	BPA Firm Surplus						
R E S O U R C E S & O P E R A T I O N S	Total Regional New CT Development						
	Total Regional New CT Operation						
	Reduction in Regional Conservation						
	BPA Power Purchases (under average runoff)						
E N V I R O N M E N T A L	SO ₂ Emissions						
	NO _x Emissions						
	TSP Emissions						
	CO Emissions						
	CO ₂ Emissions						
	Land Use						
	Water Consumption						
	Estimated Environmental Cost of Air Emissions						

Key, figure S-2:



* There is no comparable table showing results across the EIS alternatives under the Detailed Fishery Operating Plan (DFOP) operation of the hydro system, because the DFOP operation increases BPA's costs above maximum sustainable revenue level for all alternatives which necessitates response strategies that BPA cannot yet specify. The uncertainty of response strategies prevents the type of detailed analysis shown above for current hydro operations. See Section 4.4 for examples of response strategies.

are based on analysis in chapter 4. Note that these are impacts without reference to whether the alternatives can be implemented. Section 2.7 presents analysis on the alternatives' probability of implementation.

2.6.3 Effects of Modules

2.6.3.1 Fish and Wildlife

BPA will make choices on three issues related to administration of its fish and wildlife program: (1) the level of responsibility and accountability BPA asserts for how program funds are spent; (2) how the agency tries to control its fish and wildlife costs; and (3) who administers the program. These three issues are interrelated. All modules are expected to implement the Council's F&W Program, the ESA Recovery Plan, and other mandated actions, including changes in hydro operations. At issue is how these responsibilities will be carried out and how the choices affect BPA's ability to control its costs. That ability depends on retaining enough customers who will buy firm power at a sufficient rate to balance costs. However, the very unpredictability of fish and wildlife costs is a factor that will tend to discourage customers from maintaining loads on BPA and cause them to look elsewhere for power. The three fish and wildlife modules are discussed below.

Status Quo (FW-1)

BPA would continue to fund fish and wildlife measures without systematically requiring demonstrated effectiveness. Continuing current fish and wildlife administrative policies (funding of virtually all program measures, unlimited expenditures, and little consideration of BPA's other roles) would be most likely to keep fish and wildlife costs unstable and unpredictable. Customers would be likely to seek power supplies elsewhere, potentially increasing impacts from CTs and thermal generation. Under the worst case, BPA's revenues could no longer support funding of all necessary fish and wildlife measures.

BPA-Proposed Fish and Wildlife Reinvention (FW-2)

BPA would work with other entities to set priorities for funding and to monitor results; establish multi-year, base-level funding agreements keyed to BPA maximum sustainable revenues; establish a gain-sharing trust for excess revenues; and use gain-sharing to fund additional activities. With consultation, monitoring of results, and additional controls, BPA customers could be more confident of future fish and wildlife costs. Environmental impacts would more closely resemble those under BPA's resource acquisition choices. However, if monitoring showed poor results, more funding might be required, with results similar to those under FW-1.

Lump-Sum Transfer (FW-3)

BPA would transfer control for implementing fish and wildlife actions to fish/wildlife agencies and Tribes via trusts or lump-sum transfers. This module might require Federal legislation. Adjustments would be limited to review or renewal opportunities provided in the trust or transfer agreement. With funding priorities and monitoring assigned to other entities, cost stability would increase unless lack of results pressured BPA to increase funding levels despite prior funding agreements. BPA accountability would decrease.

2.6.3.2 Rate Design

Seasonal Rates - Three Periods (RD-1)

BPA power rates for utility customers would have three seasonal periods of 3 to 5 months each, to achieve a closer seasonal linkage between BPA's wholesale power rates and the market price of power. There might be a seasonal load loss from the generating publics during the high-rate periods; however, there would be slight overall load effects of implementing this module. BPA rates and market prices would be more closely

matched, and costs would be shifted among various BPA customers. The primary environmental impacts would stem from utility and DSI decisions about whether and when to place load on BPA given the seasonal rates. During periods when they did not place load on BPA, these customers would likely rely on power purchases, probably supported by existing thermal generation or CTs. The extent to which customers place more load onto BPA in low-rate periods and less in high-rate periods would depend on the extent to which rates vary by period compared to the rates for alternative power supplies during those same periods.

Streamflow Seasonal Rates - Real Time (RD-2)

BPA power rates would change monthly, based on projected current-year streamflows. This would present BPA's customers with substantial rate uncertainty. Environmental impacts would be as described above, although the rates uncertainties could cause more utilities to shift load to other power sources (primarily thermal).

Streamflow Seasonal Rates - Historical (RD-3)

BPA's power rates would change monthly, based on historical average streamflows. Impacts would be similar to those of the Seasonal Rates - Three Periods module described above—that is, some customers would be likely to put more load on BPA during low-rate periods, and less during high-rate periods, but the rates would be more certain than the real-time streamflow rate, so the potential for BPA load losses would be reduced.

Eliminate Irrigation Discount (RD-4)

BPA would eliminate the current discount to farmers who use electricity for irrigation or drainage (April through October). The decline in irrigation load would be a small percentage of total load, and revenue impacts on BPA would likewise be small. Environmental impacts would include increased efficiency of irrigation (thus reducing water use for farming); some changes to crops that require less water; and an increase in farming costs, perhaps beyond the point of economical return for some farmers. Farmers might seek out less energy-intensive methods of farming. Grazing might increase as a likely alternative agricultural use of some naturally arid lands. Acreage of irrigated land would be reduced slightly, and flows diverted from the Columbia and Snake rivers for irrigation would also be reduced.

Variable Industrial (VI) Rate (RD-5)

In this module, the VI rate (a DSI rate for aluminum smelters where the price of electricity varies with the price of aluminum) would be extended past 1996. Because the effect of this rate would depend on a large numbers of factors outside the scope of this EIS (including the long-term price of aluminum and BPA's load/resource balance), specific load changes cannot be predicted for each alternative. Generally, the VI rate allows aluminum smelter load to continue operation during periods of low aluminum price, increasing BPA's firm loads and firm power revenues over those that would occur if those DSIs shut down.

Because of these higher smelter operating levels during periods of low aluminum prices, the VI rate reduces BPA's financial risk and revenue variability compared to what they would be if the aluminum smelters purchased BPA power at the standard rate. Under the standard DSI rate (Industrial Power or "IP" rate), many of BPA's aluminum smelters would have drastically curtailed production or ceased operations during the sustained periods of low aluminum prices recently experienced. Once shut down, smelters remain down longer because of the high cost of restarting a closed production capacity. By lowering the electric rate, the VI rate permits smelters to operate that otherwise probably would have shut down. The total revenue BPA receives from the smelters under the variable rate is higher, and the swings in revenue are lower than under the IP standard rate. BPA financial planning must take into account the potential for unpredictable changes in revenue as aluminum prices change. Current projections of prices for aluminum and for alternative power sources suggest that DSIs would continue to operate regardless of the cost of BPA power. If that is the case, the primary impact of this module would be to influence whether DSI loads are served by BPA or by other power sources.

Load-Based Tier 1 (RD-6)

BPA would base the amount of Tier 1 allocation on a percentage of historical loads for each customer and a percentage of the existing capability of existing Federal resources. Federal system capability serving Tier 1 loads would be fixed. Purchased power would make up any seasonal gap. Environmental effects would differ by comparison with a Resource-Based Tier 1 (below): with RD-6, costs of meeting load would be spread across all utilities buying Tier 1 power, whether their load were growing or stagnant. Incentives to conserve or to turn to power suppliers other than BPA would be spread relatively evenly among winter-peaking utilities and BPA customers with flat load shapes. Effects would be similar among all alternatives in which the module applies.

Resource-Based Tier 1 (RD-7)

BPA would base Tier 1 size on a fixed percentage of FBS firm capability. The amount would vary monthly. All additional power would be purchased at Tier 2. Under this module, costs of new resources to meet growing loads would be allocated more heavily to utilities with winter-peaking loads, giving them greater incentive to implement conservation programs or to turn to power suppliers other than BPA. Summer-peaking utilities or customers with flat load shapes, which would not share in new resource costs, would have less incentive to implement conservation measures or to turn to power suppliers other than BPA. Effects would be similar among all alternatives to which the module applies.

Market-Based Tier 2 (RD-8)

BPA would set the Tier 2 rate slightly below the price of long-term power or the cost of alternative resources that existing customers could purchase for use as an alternative to BPA power; Tier 1 might absorb Tier 2 costs. This module would help BPA to maintain competitive prices for Tier 2 sales even when Tier 2 costs were above the market price, by supporting Tier 2 sales with Tier 1 revenues. Conversely, Tier 2 sales at the market price could reduce Tier 1 rates if Tier 2 costs were below the market price. When the market price is falling, this module would add to uncertainty of Tier 1 prices and increase loss of BPA utility firm loads. Effects would be similar among all alternatives to which the module applies.

2.6.3.3 Direct Service Industries Services/Rates

Renew Existing DSI Power Sales Contracts (DSI-1)

In 2001, DSIs would be offered new power sales contracts that incorporate the major elements of current contracts. This module is intrinsic to Status Quo, and is assumed to lead to reductions in DSI load because of the unresolved disputes between the DSIs and BPA regarding certain provisions of the existing contracts. However, substituting this module under BPA Influence would increase the DSI load served by BPA, and would consequently decrease BPA's firm surplus. BPA revenues would increase because BPA would retain a larger portion of DSI firm load and because the DSI rate would be higher than the nonfirm rates at which the surplus would most likely be sold. Under Market-Driven and Maximize Financial Returns, BPA revenues would decrease with decreases in DSI load as DSIs would reduce their BPA loads in response to the terms of the contracts; there might be some additional costs to BPA because of the need for additional reserves. Implementation of this and other DSI modules would affect only whether increased load is served by BPA or other sources. If the latter, more CTs would likely be developed and operated, with corresponding effects on water, land use, and air quality (from emissions). However, at certain times of the year, BPA might have surplus which could be used to displace higher-cost thermal resources (e.g., coal). Use of newer and relatively cleaner CTs and displacement of older thermal/coal resources might be a net positive impact on air quality.

Firm DSI Power in Spring Only (DSI-2)

DSIs would be offered firm service for all contracted load during the spring flow augmentation period; for the remainder of the year, load would be 100-percent interruptible after a specified notice period. Implementation

of this module under any applicable alternative would lead to a major shift of DSI firm load away from BPA, reducing BPA's revenues. Rates would rise. Environmental impacts would be similar to those described under DSI-1, as loads shifted to other suppliers that might rely more on CTs, with attendant impacts on air quality and land use.

Declining Firm Service (DSI-3)

The amount of firm service offered to DSIs from Tier 1 power would decline over time to maintain availability of Federal firm power to public agency preference customers. This module is intrinsic to the Market-Driven, Minimal BPA, and Short-Term Marketing alternatives, and helps retain DSI loads, at least in the short-term. BPA revenues would increase under BPA Influence, due to higher DSI loads, because this module would replace the "Firm DSI Power in Spring Only" module that is otherwise assumed for this alternative. Under Maximize Financial Returns, DSI loads would not change substantially. Environmental impacts of DSI loads moving away from BPA would be as described above for DSI-1.

No New Firm DSI Power Sales Contracts (DSI-4)

When their current contracts expire in 2001, DSIs would not be offered any contracts for firm power supply; any power DSIs purchased from BPA would be nonfirm. If BPA gave up this load, the large amount of power suddenly available would drive down the price of power, further reducing BPA revenues. For the Market-Driven, Maximize Financial Returns, and Short-Term Marketing alternatives, the combined effect of revenue losses and cost increases could total up to \$250 to \$275 million annually. BPA would probably be unable to meet its financial obligations under a revenue loss of this magnitude. Environmental impacts would be similar to those described above for DSI-1, but far greater, due to larger firm load losses.

100-Percent Firm Service (DSI-5)

BPA would provide all four quartiles of the DSI load as firm (non-interruptible) power. Under the BPA Influence alternative, BPA revenues would increase under this module because the DSI firm load would be large compared to spring-only firm service. Overall, BPA rates to other customer classes would decrease with increased revenues from DSI sales. Under Market-Driven, DSI loads would remain close to the level of DSI loads on BPA assumed in the early years of DSI service in the alternative, and not decline over time. This module is intrinsic to the Maximize Financial Returns alternative, and is assumed to be responsible for the high level of DSI load served by BPA. Under Short-Term Marketing, BPA's DSI loads would increase somewhat. Environmental impacts would result from the fact that there would be less development of new generation (probably CTs) and more operation of existing thermal resources when BPA serves more DSI load.

2.6.3.4 Conservation/Renewable Resources

"Fully Funded" Conservation (CR-1)

BPA would fund conservation at total spending levels comparable to those under Status Quo. The annual increase in BPA costs would be up to \$90 million per year. Under Market-Driven, Maximize Financial Returns, and Short-Term Marketing, the increased PF rate would lead to higher load loss among BPA preference and DSI customers. Increased conservation acquisition would likely reduce BPA's and the region's acquisition of CTs and/or cogeneration, consequently slightly reducing the associated land use, water, and air quality impacts. The magnitude of such positive impacts would depend on how much total conservation is acquired by BPA and other utilities.

Renewable Resources Incentives (CR-2)

BPA would offer price incentives or discounts to renewable resource proposals to stimulate development and market transformation potential of renewable resources (especially wind/geothermal) already underway.

Given the current market prices for power, it appears unlikely that this module would lead to substantial increases in the amount of renewable resources developed in the region; even with a 10-percent incentive, renewable resources are predicted to cost substantially more than the market price for power.

Maximize Renewables Acquisitions (CR-3)

BPA would acquire all available commercial renewable resources, even at prices above the competitive price of non-renewable resources. These would tend to replace natural-gas-fired CTs or short-term power purchases in BPA's resource portfolio. BPA would develop a firm surplus as a consequence. BPA's revenue requirement would increase, leading to rate increases and revenue losses as load moves off BPA to be served by other sources. Environmental effects, as above, would depend on the incremental amount of renewable resources acquired under each alternative; generally, acquiring renewable resources instead of CTs or short-term power purchases would reduce air emissions and water use, but slightly increase land use impacts.

"Green" Firm Power (CR-4)

BPA would offer power from renewable resources at cost, including services comparable to those included in Tier 2 power. The amount of "Green" Firm Power that BPA would offer would depend on the willingness of a group of BPA customers to commit to purchase the output for the economic life of the resources. By developing this module, BPA would not acquire a like amount of CTs and/or power purchases. However, "Green" Firm Power could help reduce the load BPA loses to other suppliers by offering customers a more environmentally benign resource pool, which some customers may want to acquire to serve load growth. This module would be revenue-neutral because BPA would acquire these resources only in an amount equal to the commitments made by its customers for "Green" Firm Power. Environmental impacts would change as described above as CTs are replaced with renewable resources.

2.6.4 Effects of the EIS Alternatives Under Detailed Fishery Operating Plan Hydro Operations (SOS 9a)

Under a Detailed Fishery Operating Plan (DFOP) operation, BPA would respond by purchasing power or resources to replace the hydro capability lost through increased flow augmentation, drawdown, and increased spill. (See section 4.3.4 for more information on river operations.) Under DFOP, for example, monthly energy capability could be reduced by as much as 6,000 monthly aMW (or megawatt-months) in September through December in average water years; more in dry years. Federal generation would also be significantly reduced in spring and early summer months, with regional peaking capability reduced from September through January.

Replacing the hydro capability lost under DFOP would have both business and environmental effects for all alternatives. The "replacement" purchases would add to BPA's costs by \$300 to \$600 million annually. BPA would have to increase firm power rates to the maximum sustainable revenue level to balance costs with revenue; although, for those alternatives with rates already at or near the maximum revenue even without DFOP operations, other strategies would be needed. Rate increases would not be sufficient to pay BPA's increased costs under any of the alternatives and would give customers greater incentives to purchase non-BPA power, causing a potentially significant loss of BPA firm load. BPA would have to adopt response strategies (as described in section 2.5) to try to bring revenues and costs into balance and to avoid missing its scheduled annual U.S. Treasury payments. The types of response strategies that BPA would favor vary among the alternatives, depending on the business direction of each alternative.

Replacement of lost firm hydro capability with a combination of CTs and power purchases would lead to environmental impacts associated with the resources used. Increased springtime flows would tend to result in more displacement of thermal generation, both within and outside the PNW, in the spring. BPA load lost to other suppliers (due to the firm power rate increase) would most likely be served with generation from new CTs. The development and operation of those CTs would result in environmental impacts typical of these

generators, while tending to reduce the impacts of the operation of higher-cost generation that would be displaced.

Under all alternatives, BPA would be expected to seek financial support from sources other than ratepayers.

Projected effects under specific alternatives are as follows.

2.6.4.1 Status Quo

BPA could hold its utility customers under existing power sales contracts until those contracts expire in 2001. After that, the shift of historical BPA firm loads to non-BPA suppliers would accelerate (perhaps doubling) as average PF rates increased. The DSI firm load would diminish to little or none. BPA would be unlikely to sell its surplus firm power except at prices well below the PF rate. With revenue shortfalls, financial commitments could not be met, including Treasury repayment and conservation incentive payments. Political intervention would be likely if BPA became chronically unable to make scheduled payments on its debts. Cost-cutting would extend into established programs, including power resource acquisition, transmission system development, energy conservation, the Residential Exchange program, and fish and wildlife enhancement. Statutes would likely require modification to permit program cuts. Other entities could be expected to take on relinquished BPA commercial functions. Funding would have to be found for non-commercial activities such as fish and wildlife enhancement. (However, fish and wildlife enhancement costs for other than hydro operations might be reduced if the changed river operations improved fish survival.) BPA might have to sell off assets to raise short-term cash. Ultimately, BPA's course of action would come to resemble that under Minimal BPA. BPA would become merely a caretaker managing the remainder of the system for the surviving participants in the competitive wholesale power market.

Generation impacts during summer, fall, and winter would increase from power BPA would purchase (probably CT-generated) to replace lost firm hydro generation. CT development would be accelerated, with consequent impacts on air quality, water consumption, and land use. When nonfirm energy is available (during spring flow augmentation periods), it would be used to displace CT operations and impacts. The increase in spring flows under DFOP operation would increase hydro energy available in spring, leading to displacement—and lower impacts—of thermal generation across all west coast interconnected power systems. Increased CT impacts would be forestalled only where customers implemented conservation or developed renewable resources.

Conventional response strategies would be limited under Status Quo to raising rates (which would be of little help, at least with respect to firm power rates). Other response strategies that BPA would likely consider, given the financial crisis that DFOP would precipitate under Status Quo, would be deeper cost-cutting, likely leading to restructuring, curtailment, or termination of programs. Some marketing responses might be implemented; some costs might be transferred to other entities. Coercive practices might be adopted to discourage customers from reducing their BPA loads.

2.6.4.2 BPA Influence

Although firm power rates under BPA Influence are lower than under the Status Quo, they would still approach the maximum sustainable revenue level, and thus there would be little opportunity to use firm power rate increases to pay the added costs of SOS 9a operation. The necessary increase in rates to cover the costs of power purchases would reinforce customers' inclination to shift load to non-BPA suppliers. Significant shortfalls (though less than under Status Quo) would still jeopardize fulfillment of financial obligations, with comparable likelihood of outside intervention. Conservation incentive programs would continue under this alternative before DFOP, and would offer opportunity for cost reductions in response to DFOP costs; likewise, fish and wildlife costs might be reduced if the changed river operations improved fish survival. Under BPA Influence, the agency would already have adopted many other cost-cutting measures; additional cost-cutting would depend on curtailment of planned program activities. As with Status Quo, other market suppliers would be expected to step in to replace BPA's commercial activities. Non-commercial activities would be replaced only by specific measures to compensate for a reduced BPA role. As under Status Quo, BPA's role might be reduced ultimately to that of a caretaker, though this is somewhat less likely than under Status Quo.

However, adverse developments in the wholesale power market could worsen BPA's condition to the point that changes in its mission to limit its activities similar to Minimal BPA could become a credible strategy to achieve stability.

Environmental impacts would be similar to those under Status Quo. In addition, if BPA conservation spending were reduced so that conservation achievement declined, additional CT impacts would occur as CTs were operated to serve the load that otherwise would have been met with conservation.

Response strategies, other than raising rates, could help. Initially, BPA might choose to hold utility customers under existing power sales contracts to limit their ability to purchase from other suppliers. Since BPA would offer unbundled power products and services, revenue from those products might be increased. For example, BPA could charge higher prices for products based on hydro flexibility. However, these benefits would cover only a fraction of the revenue gap. A stranded investment charge could make it more costly for customers to shift firm load away from BPA and could raise the maximum sustainable revenue level. Significant savings could be realized in BPA's energy conservation activities with cost reductions and program changes. Direct costs for fish and wildlife measures might be reduced if the DFOP operations were successful. Other cost reductions might require changes in the laws that define BPA's missions. Transferring costs to others would be a high priority.

2.6.4.3 Market-Driven

Rates under this alternative would be somewhat below the maximum sustainable revenue level, so there would be some potential for additional revenue through increases in firm power rates. However, such increases would cause more BPA customers to shift their loads elsewhere, and would reinforce customers' concerns about unpredictable BPA costs. The potential for and amount of revenue shortfall would probably be less than under BPA Influence. However, a significant decline in the price of wholesale power could reduce BPA revenue below the sustainable level, and lead to initiatives to limit BPA's activities to resemble Minimal BPA, as described above. This alternative already incorporates wide-ranging cost reduction, so opportunities for further reductions would be limited. If the DFOP operations were highly successful in restoring fish runs, BPA fish and wildlife spending could be reduced. Other reductions would cut into programs, which potentially might fall to other entities for action.

As with other alternatives, the chief environmental impacts would be those of resources or power purchases to replace lost firm hydro capability and the complementary displacement of thermal generation by hydro generation in spring. Impacts of generation would also increase if conservation programs were reduced.

BPA's response strategies initially would be oriented toward taking financial risks in the near term to retain firm load without coercive measures. BPA would raise firm power rates and strive to increase revenues from sales of unbundled and/or new products and services, expanded marketing, and so on. BPA would not implement a stranded investment charge (as incompatible with the concept of Market-Driven), but would explore other ways to cut spending, including transfer of costs to other entities (e.g., fish and wildlife expenditures not attributable to the share of FCRPS costs allocated to power production). BPA would seek cost-sharing contributions as well.

2.6.4.4 Maximize Financial Returns

Even without DFOP, BPA's firm power rates would be set deliberately at the maximum sustainable revenue level under this alternative, independent of BPA's costs. Costs would be comparable to, or somewhat lower than, the Market-Driven alternative. However, under DFOP, costs would exceed even maximum revenues. BPA would be likely to exploit its hold on utility customers under existing power sales contracts to avoid load losses until 2001. BPA would not increase rates in order not to drive away customers, but customers would recognize the approach of BPA insolvency as costs exceeded revenues, and could shift load away in any case, once power sales contracts expired. BPA could avoid a shortfall (and potential intervention) only through additional measures. There would, however, be few opportunities for additional cost reductions. As with previous alternatives, savings in fish and wildlife spending might be possible if DFOP eliminated the need for some fish and wildlife measures.

Environmental impacts would be similar to those described above from redistributing hydro capability among the months of the year and from complementary redistribution of CT operations.

Most cost-cutting measures would already have been taken. Transmission rates and a stranded investment charge could be used as response strategies, raising the maximum sustainable revenue level. Shares of new transmission capacity might be sold; other responses such as increased Treasury borrowing or appropriations might be undertaken. Transfer of some fish and wildlife costs, as above, could make a significant contribution to BPA's revenues.

2.6.4.5 Minimal BPA

BPA's customers' shares of BPA's power would be reduced to adjust to lost hydro capability, and they would have to obtain replacement power from other sources. Most replacement power would be supplied from CT generation. The firm power price would increase to the maximum sustainable revenue level, driving away some customer loads, leaving BPA with requirements firm power that BPA would have to sell as firm surplus.

Basic environmental impacts would be the same as for other alternatives. However, customers (not BPA) would make the choice of resources to replace lost hydro capability. (BPA would be influenced by the Council's Power Plan, while customers would be constrained mainly by least-cost planning or integrated resource planning requirements of state public utility commissions or resource siting authorities.)

As with other alternatives, BPA could be expected to rely on existing power sales contracts to retain utility load through 2001, rather than offer new contracts before the old ones expire. BPA could raise power rates to the maximum sustainable revenue level, and could add a stranded investment charge. However, this would be more of an aggressive role in the market (compared to the "caretaker" role this alternative suggests). It is unlikely that significant additional spending cuts could be identified. Some savings in fish and wildlife costs might be realized through DFOP, as noted above. BPA would certainly seek to transfer some obligations for fish and wildlife.

2.6.4.6 Short-Term Marketing

Rates, and therefore load effects, would be similar to those under Market-Driven. Loads would decline with the increase in rates, and DFOP costs would heighten customers' concerns about BPA costs. Political intervention to modify BPA's authority would again be a possibility, as BPA might be unable to meet its payment obligations. If DFOP improved fish conditions, some fish and wildlife spending might be reduced.

Environmental impacts would be essentially the same as those under Market-Driven. As response strategies, BPA would raise rates and increase revenues from other activities, as possible. A stranded investment charge would not be appropriate, but BPA would implement any feasible spending reductions, and would seek transfer of appropriate fish and wildlife costs, in addition to seeking other opportunities for cost-sharing.

2.6.5 Evaluation of EIS Alternatives Against EIS Purposes

The purposes for action described in chapter 1 are the major criteria for measuring the effectiveness of EIS alternatives in meeting the need for action. Based on the analysis of the market responses and against the environmental impacts of alternatives in chapter 4, the alternatives may be evaluated against the purposes.

2.6.5.1 Status Quo

Achieves Strategic Business Objectives. The **Status Quo** alternative would not meet this purpose, for a number of reasons. Customer satisfaction is unlikely, given increasing costs and rates, and poor cost control. BPA's poor competitive position in the regional electric utility market would prevent increases in the value of BPA's business; consequently, there would be no expanded benefits to share. High and uncertain costs would prevent BPA from being the lowest-cost producer, and would seriously jeopardize BPA's financial integrity. BPA would maintain system reliability and invest in environmental results to the extent that its marketing

could support those efforts. BPA's ability to perform as an organization would be handicapped by its weak position in the regional power market.

Competitively markets BPA's products and services, within and outside the region. As noted above, under the **Status Quo** alternative, program costs would continue to grow, and BPA rates would rise to levels at which they would no longer be competitive in the regional and West Coast electric power markets. Loss of customer loads to competing suppliers would also cause BPA's rates to rise above the maximum sustainable revenue level.

Provides for equitable treatment of Columbia River fish and wildlife. Under the **Status Quo** alternative, BPA would cooperate with the COE, the BOR, Indian Tribes, and other interested parties to operate the hydro system to provide equitable treatment of fish and wildlife along with power production. BPA would also continue to meet its commitments to fund fish and wildlife enhancement measures. However, BPA's competitive disadvantages under this alternative could make it difficult for it to generate enough revenue to meet all its costs, possibly interfering with funding for fish and wildlife measures, and weakening equitable treatment of fish and wildlife.

Achieves Council's conservation goal. BPA would achieve its share of the Council's regional conservation target, although load losses would tend to concentrate BPA's conservation efforts among those customers that continued to purchase their power requirements from BPA.

Establishes rates that are easy to understand and administer, stable, and fair. BPA would continue to adjust rates every 2 years. Rates would tend to be unstable, as successive rate increases would be needed to make up for lost loads. BPA's rate schedules would retain their current features, including any which customers perceive as complex.

Recovers costs through rates. Load losses due to the higher costs and rates that would occur with the **Status Quo** alternative would make it difficult for BPA to recover its costs.

Meets legal mandates and contractual obligations. BPA's ability to meet its mandates and obligations would be hampered by the BPA load losses and revenue shortfalls that would arise from operating under the **Status Quo** alternative.

Avoids adverse environmental impacts. Energy conservation achieved and renewable resources developed under the **Status Quo** alternative would avoid environmental impacts of other types of generation that would otherwise be needed, but if these "green" resources contributed to a surplus of BPA energy resources, they would add to the cumulative impacts of resource development, at least during the period of surplus. BPA firm load losses would be accompanied by the development and operation of more CTs by other utilities and IPPs; CTs would emit exhaust gases and consume water for cooling, but because new CTs are relatively cleaner resources compared to existing thermal generation, their development could lead to a slight net improvement in the environmental impacts of power generation. Some adverse environmental impacts might result if new energy resource development were not efficiently coordinated.

Establish productive government-to government relationships with Tribes. BPA would continue its past practices in relation to Northwest Indian Tribes, focusing on existing contacts with Tribal fish and wildlife managers or Tribal customer utilities.

2.6.5.2 BPA Influence

Achieves Strategic Business Objectives. **BPA Influence** would provide better conditions for meeting this purpose than the **Status Quo** alternative. Cost reductions, program reinventions, unbundled products, and tiered rates would help to promote customer satisfaction, and better enable BPA to increase the value of its business and generate expanded benefits to share with customers and constituents. However, high conservation costs and service provisions that result in losses of BPA firm loads would make it difficult for BPA to be the lowest-cost producer. Under present market conditions and current hydro operations, BPA would be able to maintain its financial integrity, but it would face problems meeting its expenses if changes in hydro operations were to add significant new costs to meeting BPA's power supply obligations. If the market price for power continued to fall, it would be more difficult for BPA to maintain its financial integrity under

this alternative. Similarly, BPA would be able to maintain reliability and continue its environmental investments under current hydro operations, but could have considerable difficulty doing so if changes in hydro operations increased power costs. Nevertheless, BPA generally would be able to function as a high-performing business-oriented organization.

Competitively markets BPA's products and services, within and outside the region. Under the **BPA Influence** alternative, it would be difficult for BPA to remain competitive, but not as difficult as under the Status Quo alternative. Program costs, such as for conservation, would be relatively high, and BPA rates would be high enough that other suppliers could offer lower prices. Loss of customer loads (particularly DSIs) to competing suppliers could cause BPA's rates to rise above the maximum sustainable revenue level.

Provides for equitable treatment of Columbia River fish and wildlife. As under Status Quo, under the **BPA Influence** alternative, BPA would cooperate in hydro operations with other entities to provide equitable treatment of fish and wildlife along with power production; the agency would also continue to meet its commitments to fund fish and wildlife enhancement measures. The potential difficulties BPA could face in marketing power under this alternative (though less than under Status Quo) could weaken BPA's ability to provide funding, and therefore to support equitable treatment.

Achieves Council's conservation goal. As with the Status Quo alternative, under the **BPA Influence** alternative, BPA would achieve its share of the Council's regional conservation target, although load losses would tend to concentrate BPA's conservation efforts among those customers that continued to purchase their power requirements from BPA.

Establishes rates that are easy to understand and administer, stable, and fair. A greater focus on relationships with customers could lead to simpler rate designs. Rate stability might prove difficult for BPA if changes in hydro operations were to increase BPA's power costs significantly.

Recovers costs through rates. The **BPA Influence** alternative would allow BPA to recover its costs with current hydro operations, but cost recovery might prove difficult for BPA if changes in hydro operations were to increase BPA's power costs significantly, or if the market price of power declined significantly.

Meets legal mandates and contractual obligations. As with the Status Quo alternative, BPA's ability to meet its mandates and obligations would be hampered under the **BPA Influence** alternative by the BPA load losses and revenue shortfalls that would arise from the costs and terms of that alternative.

Avoids adverse environmental impacts. Conservation funding, renewable resource acquisitions, and "Green" Firm Power would avoid the impacts of thermal power generation. Greater emphasis on renewable resource development than other alternatives would substitute the impacts of renewable resources for those of other forms of generation, except where development would create or increase BPA surplus firm power. As under Status Quo, development of new CTs would tend to reduce overall impacts of power generation.

Establish productive government-to government relationships with Tribes. BPA would adopt a more customer-oriented approach to its activities, including steps to establish better relationships with Tribes.

2.6.5.3 Market-Driven

Achieves Strategic Business Objectives. The **Market-Driven** alternative would have a greater probability of meeting this purpose than the other alternatives. As with BPA Influence, cost reductions, program reinventions, unbundled products, and, in the long term, tiered rates would help to promote customer satisfaction, and would better enable BPA to increase the value of its business and generate expanded benefits to share with customers and constituents. The cost reductions and program changes would also help BPA to be among the lowest-cost producers and maintain its financial integrity if the river system were operated as currently. However, changes in hydro operations could increase power costs, or significant declines in the market price for power could reduce BPA's revenues, making it more difficult for BPA to maintain that stability successfully. Maintaining reliability and environmental investments also would be generally possible, but more difficult with changed hydro operations or lower market prices. In applying its improved programs and marketing its redesigned products and services, BPA would be able to function as a high-performing business organization.

Competitively markets BPA's products and services, within and outside the region. Under the **Market-Driven BPA** alternative, BPA would cut program costs and offer competitive rates, leading to lower rates on average than under Status Quo and BPA Influence. BPA's reduced revenue requirements, more flexible power products, and customer-responsive rate designs would provide for a more competitive power supply. Overall, loads on BPA would be higher than under Status Quo, and, with a stronger load base, BPA would be more likely to maintain revenues, which would help to assure a competitive power supply.

Provides for equitable treatment of Columbia River fish and wildlife. As with the alternatives above, BPA would cooperate in hydro operations to provide equitable treatment of fish and wildlife along with power production, and would continue to meet its commitments to fund fish and wildlife enhancement measures. High power costs due to changes in hydro operations, or adverse developments in the power market, could undermine BPA's ability to generate revenues to fund fish and wildlife measures and, consequently, equitable treatment.

Achieves Council's conservation goal. As with the Status Quo and BPA Influence alternatives, under the **Market-Driven** alternative, BPA and its customers would achieve the share of the Council's regional conservation target applicable to BPA's loads. Conservation savings would be achieved through independent utility programs, BPA DSM services, and BPA market transformation activities, with a commitment from BPA to finance additional efforts if independent efforts fall short of the target.

Establishes rates that are easy to understand and administer, stable, and fair. BPA's commitment to be responsive to customer needs would mean that BPA would develop rates that meet customers' needs for clarity and simplicity. Changes to make BPA more competitive under the **Market-Driven** alternative would help to assure that BPA would maintain stable rates, although cost increases due to changes in hydro operations could create significant problems for BPA in maintaining rate stability.

Recovers costs through rates. Changes to make BPA more competitive under the **Market-Driven** alternative would help to assure that BPA would recover its costs, although increases in costs or a drop in market prices could require BPA to take steps to cut costs or raise revenues.

Meets legal mandates and contractual obligations. BPA would continue to meet its mandates and obligations, supporting its actions by customer-oriented marketing.

Avoids adverse environmental impacts. The **Market-Driven** alternative would avoid adverse environmental impacts through energy conservation and "Green" Firm Power, which would substitute the largely benign impacts of conservation and renewable resources for the impacts of new CTs that would otherwise be developed to serve loads. Greater success in maintaining service to BPA's historical loads would tend to lessen the amount of new generation constructed, avoiding the adverse impacts of those developments.

Establish productive government-to government relationships with Tribes. BPA would adopt a more customer-oriented approach to its activities, including steps to establish better communications with Tribes. More emphasis on cost management would make it easier for BPA to devote resources to enhancing its relationships with the Tribes.

2.6.5.4 Maximize Financial Returns

Achieves Strategic Business Objectives. Under this alternative, BPA would achieve most of these objectives as an aggressive competitor in the electric power marketplace. Customer satisfaction would be one of BPA's goals; however, in some situations, BPA might be willing to exploit a competitive advantage even if it would not promote good will with customers. BPA would use any revenues above costs to invest in facilities or marketing opportunities to expand the business, but would not necessarily share the benefits of the expansion with customers. Strict cost management could make BPA the lowest-cost producer, and would assure that BPA maintained its financial integrity; as elsewhere, increased power costs from changes in hydro operations or reduced revenues from falling market prices could offset the advantages of this management. As with the Market-Driven alternative, maintaining reliability and environmental investments would be generally possible, but more difficult with changed hydro operations or lower market prices. The organizational emphasis on competing in the market would also promote high performance.

Competitively markets BPA's products and services, within and outside the region. In the **Maximize Financial Returns** alternative, BPA would limit resource acquisition, conservation, transmission, and other costs more than any other alternative except Minimal BPA, and would not implement tiered rates. Rates would be set near the maximum sustainable revenue level. Because marginal rates would be relatively low, loads on BPA would remain stable. Because rates would allow a return over cost, BPA's revenues would be sufficient over the long term to assure the ability to acquire resources as needed. Overall, this alternative would be likely to assure a competitive power supply.

Provides for equitable treatment of Columbia River fish and wildlife. As under the alternatives above, BPA would cooperate in hydro operations to provide equitable treatment of fish and wildlife along with power production, and would continue to meet its commitments to fund fish and wildlife enhancement measures. Because of the emphasis on maximizing financial returns, BPA would seek to cut fish and wildlife costs wherever cost reductions could be achieved, while providing required support. Cost-cutting or increased power costs from changed hydro operations could weaken equitable treatment of fish and wildlife.

Achieves Council's conservation goal. The priority that BPA would give to meeting its obligations at lowest cost could interfere with achievement of targeted energy savings. From a strictly business perspective, the orientation of the **Maximize Financial Returns** alternative could lead BPA to pursue a revision in the Council goal to reduce targeted savings and costs, or to allow savings to fall short of the target, thereby deferring costs, and await the Council's response.

Establishes rates that are easy to understand and administer, stable, and fair. BPA's rates under the **Maximize Financial Returns** alternative would be focused on supporting BPA's business goals, rather than accommodating the desires of its customers. Rates would be simplified to the extent they would aid BPA in maximizing its revenues. Pricing at the maximum sustainable revenue level would make BPA's rates stable, at least with reference to market prices. Rates would be fair in relation to BPA's business goals and regulatory constraints.

Recovers costs through rates. The business emphasis of this alternative would focus BPA on cost recovery.

Meets legal mandates and contractual obligations. BPA would continue to meet its mandates and obligations, focusing on doing so at the least possible cost.

Avoids adverse environmental impacts. By marketing to continue service to BPA's existing loads, **Maximize Financial Returns** would avoid the impacts of new resource development, but it would continue the operational impacts of less efficient, more air-polluting existing generation (such as existing coal). The environmental benefits of "Green" Firm Power sales and energy conservation would be obtained to the extent they were consistent with BPA's business goals.

Establish productive government-to government relationships with Tribes. BPA would invest in better relations with Tribes only to the extent it would support achieving BPA's business goals, and then at least practical cost.

2.6.5.5 Minimal BPA

Achieves Strategic Business Objectives. **Minimal BPA** would not meet this purpose. Customers would likely be satisfied with costs of BPA power, but would not have the range of choices available under other alternatives, and would have to arrange power supplies for loads above their BPA allocations. By ceasing resource acquisitions and system expansion, BPA would not increase the value of the business; however, the agency would be the lowest-cost producer, by maintaining the cost advantages of its hydro resource base. BPA would maintain financial integrity and system reliability by ceasing system expansion, and normally would be able to make environmental investments, but might have difficulty doing so if power costs were to increase due to changes in hydro operations. Without competitive marketing, BPA would not become a high-performing business-oriented organization.

Competitively markets BPA's products and services, within and outside the region. The **Minimal BPA** alternative would not meet this purpose. Under this alternative, BPA would cut costs and

eliminate all new conservation and generation resource acquisition, leading to the lowest costs of all of the alternatives. BPA's rates would remain low, and BPA would continue to supply power to those customers it serves; however, because BPA would not acquire new resources, BPA customers would have to look elsewhere for power supplies to serve load growth. In addition, BPA conservation programs would be reduced or eliminated, and customer resource development to serve load growth likely would not be fully coordinated. As a result, this alternative would not provide a competitive power system.

Provides for equitable treatment of Columbia River fish and wildlife. A **Minimal BPA** alternative would provide for equitable treatment by cooperating in hydro operations to support fish and wildlife along with power production, and by continuing to meet its commitments to fund fish and wildlife enhancement measures.

Achieves Council's conservation goal. With changes in statutes to relieve BPA of the responsibility to meet customers' loads, BPA would cease acquiring resources, including conservation. The Council's goal would be achieved only through independent efforts by utilities and other entities. Without BPA's participation, these efforts likely would fall far short of the targeted savings.

Establishes rates that are easy to understand and administer, stable, and fair. The orientation of this alternative toward administrative simplicity and cost recovery would favor simple rates. Because BPA's resources and costs would be essentially static, rates would be stable, except for the potential for lost revenues if hydro operations should change. BPA rates would be fair within the limits of the resources BPA has available to market.

Recovers costs through rates. Under the **Minimal BPA** alternative, BPA would meet this purpose by curtailing its marketing activities, marketing available firm and nonfirm resources, and setting rates so as to recover its costs..

Meets legal mandates and contractual obligations. BPA would continue to meet its mandates and obligations, focusing on doing so within the bounds of BPA's limited marketing.

Avoids adverse environmental impacts. Because **Minimal BPA** would not entail any new BPA resource acquisitions, it would not result directly in new resource development impacts. However, because customers would have to obtain power supplies to meet any loads above those BPA would serve, resource development by others to serve those loads would have impacts. There is also some potential that total impacts would be higher, as customers sought their own supplies, due to a lack of coordination among developers. Lower levels of energy conservation achieved under this alternative would lead to increased impacts of other types of energy resources.

Establish productive government-to government relationships with Tribes. BPA would take steps to enhance its relationships with Indian Tribes, but its diminished activities in marketing and resource development would lessen the benefits to the Tribes of improved relationships.

2.6.5.6 Short-Term Marketing

Achieves Strategic Business Objectives. **Short-Term Marketing** would meet this purpose much as under the Market-Driven alternative, except that some customers might not be satisfied with the limit this alternative would place on the term of power sales. The short-term limitation might also make it more difficult for BPA to increase the value of the business, by limiting BPA's marketing opportunities generally.

Competitively markets BPA's products and services, within and outside the region. The **Short-Term Marketing** alternative is similar to the Market-Driven alternative, but it is less competitive because BPA would not be competing for the long-term market. BPA would offer only short-term (5 years or less) power sales contracts, and would eliminate new conservation and generation resource acquisition unless cost-effective in 5 years or less. BPA's rates would be low and BPA would provide a reliable power product under short-term contracts, but BPA customers would have to look elsewhere for long-term power supplies. In addition, BPA conservation programs would be reduced. Thus, this alternative would not provide for a competitive power system.

Provides for equitable treatment of Columbia River fish and wildlife. **Short-Term Marketing** meets this purpose in the same way, and with the same limitations, as the Market-Driven alternative.

Achieves Council's conservation goal. BPA would be unlikely to achieve the conservation savings targeted by the Council under the **Short-Term Marketing** alternative, due to the limitation of energy resource investments to those which could pay for themselves within a 5-year period. The Council's goal would be achieved only through independent efforts by utilities and other entities.

Establishes rates that are easy to understand and administer, stable, and fair. As above, the **Short-Term Marketing** alternative would be comparable to the Market-Driven alternative in its ability to meet this purpose; however, the limitation on sales to a 5-year maximum term might make it more difficult for BPA to maintain stable rates.

Recovers costs through rates. As above, the **Short-Term Marketing** alternative would be comparable to the Market-Driven alternative in its ability to meet this purpose; however, the limitation on sales to a 5-year maximum term might make it more difficult for BPA to recover its costs.

Meets legal mandates and contractual obligations. BPA would continue to meet its mandates and obligations, supporting its actions by customer-oriented marketing.

Avoids adverse environmental impacts. **Short-Term Marketing** would avoid some of the adverse impacts of new generation by its greater reliance on power purchases to meet its marketing obligations. Otherwise, it would be comparable to the Market-Driven alternative.

Establish productive government-to government relationships with Tribes. **Short-Term Marketing** meets this purpose in the same way as the Market-Driven alternative.

2.7 Summary of Key Factors That May Limit Implementation

The projected outcomes of alternatives as described in the EIS assume that all the alternative approaches could be implemented and would be generally accepted by BPA customers and other affected parties such as the public, other regional utilities, and utilities outside the BPA service territory. The alternatives were assumed to be feasible, in order to test the different ways to approach BPA's involvement in the region without limiting possibilities for reasons beyond BPA's control. The following graphs and listings of key limiting factors by alternative are intended to bring those factors beyond BPA's control back into the analysis (see figure 2.7-1). The graphs and factors provide a "reality check" of the likelihood that the alternatives and associated environmental impacts would be realized.

The precise probability of actually realizing the different alternatives is not known. The alternatives were ranked relative to one another by the probability of successfully implementing the alternatives as described in the EIS. The key factors limiting successful implementation ranged from support of regional constituent groups, to consumer behavior and customer responses, to the need for changes in legislation. For example, the BPA Influence alternative has a greater chance of being successfully implemented than Short-Term Marketing. This is because BPA Influence would increase BPA funding and requirements on products and services for fish and wildlife and conservation, an action that would be more satisfying to environmental constituents, although it would incline customers to seek non-BPA suppliers due to higher rates and conditions on services. In contrast, Short-Term Marketing would be unsatisfactory to both BPA customers and environmental constituents because of the long-term planning uncertainty. The uncertain costs for customers would motivate them to seek non-BPA suppliers, and the increased uncertainty for BPA funding for fish and wildlife and conservation would make environmental constituents less confident that this alternative would achieve long-term regional goals. See section 4.9 for a more detailed review of the factors that may limit successful implementation of the alternatives.

FIGURE 2.7-1

Summary of Key Factors That May Limit Implementation of Alternatives	
<p><u>Pertinent to All Alternatives</u></p> <ul style="list-style-type: none"> •BPA's firm power rates and revenues are limited by the market price for power. If BPA's rates exceeded the market price, customers would buy power from other suppliers and BPA revenues would decline. The market price controls BPA's maximum sustainable revenue. •BPA currently has a fixed cost ratio of 80-85 percent, compared to an industry ratio of about 50-60 percent, which limits BPA's ability to reduce costs to maintain competitive prices. * •Uncertainty and a lack of regional consensus about BPA's financial responsibilities for fish and wildlife and conservation programs will limit the chance of success under all alternatives. 	
<p><u>Status Quo</u> <i>(Traditional governmental focus using market power to direct activities)</i></p> <ul style="list-style-type: none"> •Ineffective BPA cost controls. •Lack of identified BPA results and mechanism for monitoring/achieving those results. •BPA-designed and funded conservation programs that don't meet customer/regional needs. •Uncontrolled BPA rates. •Declining loads with continued resource acquisition costs. 	<p><u>Maximize Financial Returns</u> <i>(Operate more like private, for-profit business)</i></p> <ul style="list-style-type: none"> •Inability to limit conservation investments, transfer fish and wildlife responsibility to region, and select markets because of current statutes and regulations (e.g., Northwest Power Act).
<p><u>BPA Influence</u> <i>(Using market dominance to induce customers to act to achieve regional fish and wildlife, conservation, and renewable resources goals)</i></p> <ul style="list-style-type: none"> •Rise in fish and wildlife, conservation, and renewable resources costs for customers, driving BPA prices higher relative to non-BPA suppliers. •Customers' rejection of conditions of service ("hassle factor"), driving load away from BPA, increasing BPA rates, and reducing BPA's financial strength. 	<p><u>Minimal BPA</u> <i>(No growth of current system and resources)</i></p> <ul style="list-style-type: none"> •Inability to abandon energy resource and transmission development obligations, limit conservation investments, and transfer fish and wildlife responsibility to others because of current statutes and regulations (e.g., Northwest Power Act).
<p><u>Market-Driven</u> <i>(Market-responsive and results-focused)</i></p> <ul style="list-style-type: none"> •Inability to establish successful marketing practices to achieve business results, causing customers to seek non-BPA suppliers and reducing BPA loads. •Lack of environmental constituent support, causing pressure on BPA for more fish and wildlife, conservation, and renewable resources funding, which causes higher rates. 	<p><u>Short-Term Marketing</u> <i>(Focused on 5-year or shorter contracts for products and services)</i></p> <ul style="list-style-type: none"> •Inability to gain customer support due to uncertainty over costs of short-term arrangements/contracts, which cause some customers to divert BPA load to non-BPA suppliers. •Inability to gain confidence in region for achieving long-term fish and wildlife and conservation goals.

* BPA Business Plan, Unit One, June 1994.